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Barry A. Thomas

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE BRITISH PTERIDOLOGICAL SOCIETY

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The BRITISH PTERIDOLOGICAL SOCIETY was founded in 1891 and today continues as a focus for fern enthusiasts. It provides a wide range of information about ferns through the medium of its publications and other literature. It also organises formal talks, informal discussions, field meetings, garden visits, plant exchanges, a spore exchange scheme and fern book sales. The Society has a wide membership which includes gardeners, nurserymen and botanists, both amateur and professional. The Society's journals, the *Fern Gazette, Pteridologist* and *Bulletin* are published annually. The *Fern Gazette* publishes matter chiefly of specialist interest on international pteridology, the *Pteridologist* topics of more general appeal, and the *Bulletin*, Society business and meetings reports. **www site:** http://www.nhm.ac.uk/hosted_sites/bps/

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Front cover: *Hymenophyllum Tunbridgense* as illustrated in J.E. Sowerby's *The Ferns of Great Britain*

Back numbers of the *Fern Gazette, Pteridologist* and *Bulletin* are available for purchase from P.J. Acock,13 Star Lane, St Mary Cray, Kent BR5 3LJ, from whom further details can be obtained.

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BEST OF THE WEST

Excerpts from a lecture for the BPS at Coventry, July 1999

Sue Olsen, 2003 128th Ave.S.E., Bellevue, WA 98005, USA

Welcome to the U.S. Pacific Northwest where ferns find an accommodating climate remarkably similar to Britain's with summers and winters tempered from the extremes of heat and cold by ocean currents and with most seasons offering a healthy supply of moisture. ("The Pacific Northwest is fern country"... Sunset magazine, March 2000.) As in Britain, enthusiasm for gardening is keen with many areas of common interest - perennials, roses, alpines, rhododendrons and of course ferns, all attracting the allegiance of devoted gardeners, horticulturists and botanists.

Geographically the temperate area described ranges from tree fern amenable oceanic northern California with a climate comparable to Cornwall, Devon and coastal Scotland, north through Oregon, Washington and British Columbia, Canada close to some 2000 miles - a few round trips London-Edinburgh here! As one goes north the weather becomes increasingly cooler until it takes an artificial life support system to maintain a tree fern.

The majority of our native ferns grow in the maritime area west of the Cascade mountain range under a canopy of stately conifers, primarily *Pseudotsuga menziesii*, more affectionately known as the Doug Fir, but also in the shade of hemlock, spruce, cedar and in California, of course, the redwoods. Meanwhile alders, maples and willows compete for light and space in the understory layer while smaller ornamental shrubs, among them gaultherias, vacciniums, flowering currants and mahonias, line the highways and woodlands. Sadly, imported scotch broom and blackberries are also very much at home. Finally we get down to the ferns and a fine lot they are. Some such as *Blechnum spicant* (fig. 1), *Asplenium trichomanes, Athyrium filix-femina* and unfortunately *Pteridium aquilinum* will be familiar sights to the British eye and in time we'll include a look at them as we survey the pteridological palette of the northwest.

Our native ferns are not confined to the coastal corridor. The alpine areas of our mountains and the drier reaches of the eastern slopes offer a completely different complement of pteridoflora including many coveted but ne'er do wells for cultivation. These tend to be much more specific in their combination of climatic and geological demands. Here the montane terrain offers *Polystichum lemmonii,* (fig. 2), *P. lonchitis, P. scopulinum, Aspidotis densa* (a serpentine indicator), and *Cheilanthes gracillima* among others. All are a delight to the watchful eye of the hiking plantsperson, but are not for domestication, short-lived at best. The pellaeas, cheilanthes and other xerics that thrive in the sun soaked rocky sites farther east also are a demanding lot for the sea level gardener although arguably somewhat easier given a properly drained site with protection from the prevailing winter wet. We've had good success with whiskey barrel plantings that are given a southern, sunny exposure and are permanently protected from precipitation by the eaves of the house. These are indeed a collection of interesting and admired species and probably more so because of an innate urge to succeed with the impossible. The focus of this article, however, will be on the ferns that the traveler can recognize and the gardener can introduce with confidence to the woodland fernery - those of the moisture laden western slopes

Encouraged by a benevolent mixture of moisture and acid soil, *Polystichum munitum* (fig. 1), the sword fern of the west is our most ubiquitous native. While frequently passed over as being too common, it is really quite a handsome once pinnate evergreen and totally forgiving of any weather whims. It will be seen sweeping down hillsides and gracing undeveloped areas and is usually about three feet at maturity. Rain forest conditions swell this to five or even six feet. It is attractive for naturalizing or framing the woodland garden and is one of the few ferns that isn't flattened by our occasional snowstorm.

Polystichum andersonii (fig. 3), Anderson's holly fern, by contrast is far from common and quite distinguished. Similar in size and silhouette to *P. munitum*, it differs in having pinnae that are more deeply notched and fronds tipped with a single propagable bulbil. The emerging fronds are cloaked in shaggy silvery ornamental scales that enhance the ornamental value of this evergreen species.

Another near relative, *Polystichum braunii*, Braun's holly fern, decorates its spring foliage with silver as well. Those scales will fade to rust, but remain ornamental throughout the season. The fronds are quite lustrous and dressed to the ground with pinnae. It can be a somewhat touchy evergreen, but once established is a vibrant and elegant three-foot specimen.

Blechnums have always been among my favorite ferns and the blame rests with *B. spicant*, our deer fern. I associate it with refreshing woodland hikes, springtime wildflowers, serene mossy haunts and if you would - skunk cabbage! It demands acid soil and flourishes on the humusy woodland duff in the Quinault rain forest in Washington State's Olympic National Park. This is the only place where I've seen prothalli in the wild. It's here that the resident Roosevelt elk prefer to dine on *P. munitum* giving *Blechnum* the opportunity to dominate the forest floor flora. *Woodwardia fimbriata* (fig. 4), a lusty cousin of *Blechnum,* grows sparingly in Washington, better in the redwoods of Southern Oregon and best of all in Redwoods National Park in California. Here in the company of towering trees, the giant chain fern towers in its own right to nine feet near the sea or a more modest six feet father inland. It is a coarse fern but highly desired for its stately presence in a protected landscape.

Athyrium filix-femina var. *cyclosorum*, the so-called lady fern, can also willingly reach six feet in a damp shady habitat. Unfortunately, for us it can also be quite weedy and seedy frequently arriving in the garden as an uninvited guest (a 'cute' little sporeling in a choice planting). There are so many other ornamental options that it is not a local favorite. Unlike its British brethren ours are not inclined to sport so most cultivars (from Mother Nature's baroque period) are imported.

Our two Polypodies grow mainly as epiphytes. *Polypodium glycyrrhiza* (fig. 5), the licorice fern, is by far the most common. Its tree of choice is the native large leafed maple, *Acer macrophyllum* where it shows off especially well when the tree is defoliated in the winter. It also looks well in the fall when surrounded by the platter sized yellow leaves. It's not always perched on a tree, however, I've seen great stands of it on bleak coastal wind swept sand dunes and on road cuts through glacial rubble. Perhaps a lack of nutritive material is the common link. American Indians used the rhizome for licorice flavoring hence the common name. (Don't expect candy!) *Polypodium scouleri* (fig. 6) grows exclusively in close proximity to the Pacific Ocean looking like a giant eagle's nest in the crotches of spruce trees (dead or alive). It is quite distinct with succulent leathery one-foot fronds and prominent patches of yellow spores decorating the fern's underside. The natural setting is almost cave-like in its darkness. In the garden it will do well in loose loamy soil in deep shade - without the help of a spruce tree! These Polypodiums will on rare occasion hybridize - a fact I learned while visiting gardens in Germany!

The maidenhairs, in our case *Adiantum aleuticum* (fig. 2), have in my 35 some years experience been the most appealing to the casual gardener - the one who wants a token fern or two. These are the customers who ask, 'where are the flowers' or note that 'all ferns look alike'. However, it is easy to admire the ethereal and delicate tracery of this graceful native. The deciduous two-foot fronds divide in a lax pedate manner (it was formerly classified as *A. pedatum*) on top of stiff black stipes used by Native-Americans in basket weaving. In the landscape it flourishes in the company of a water feature and in nature it shows up in an incredible assortment of habitats - hinting to me that its classification may yet undergo more revision. *Adiantum aleuticum* 'Subpumilum' is a Lilliputian imitation of the species and has bounced around the nomenclature loop more than any other fern I know. It is now considered a 'dwarf ecotype' within the standard range of the species. I have propagated this many times (and I'm talking progeny by the hundreds) and have never had a single plant that was anything other than a dwarf! By whatever name, it is a charming imbricate miniature that is a welcome addition to the garden. It is not common in nature and was only discovered a relatively recent 40 years ago.

There are other small ferns that grace our landscape and gardens and *Gymnocarpium dryopteris*, the oak fern, is yet another favorite. Here too we have research in progress and will have a revision of nomenclature. This is the woodland's fairy princess who dances with green gossamer triangular skirts amongst the bunchberries and wild rubus, the nymph who shades the salamander. With moist roots this deciduous oak fern will spread with restraint in the garden's humus. It presents its kelly-green soft fronds horizontally atop a blackish stipe rarely topping six inches.

No discussion of small native northwest ferns would be complete without a look at *Asplenium trichomanes* var. *trichomanes*. Here we have the woodland counterpart of a fern incredibly common and handsome in the mortared crevices of ancient and weathered buildings in Britain and on the continent. Ours is a handsome evergreen woodland calcifuge with beadlike pinnae decorating a black stem. It is quite amenable to cultivation, however, it definitely is not common. I hauled our three children over many a back road and trail before finding it in the wild (and then in abundance) on the flanks of Mt. Rainier.

SITES FOR FERNS IN THE WILD:

T.M.C. Taylor in his excellent but now out of print book lists some 125 ferns and fern allies for the Pacific Northwest compared to just over 100 in Britain and Ireland. Of these some 30 can be found in the Perry Creek drainage which has recently been granted Federal Research Natural Area status. The Perry Creek trail is without question the favorite for a fern foray in the state of Washington. The trail originates on a forest service road east of Granite Falls and the Verlot Ranger Station, and travels gently upward for two miles to a great picnic spot by a waterfall. Most ferns including the elusive Botrychiums, which are gourmet goodies for the local deer, are found in the first mile. Here too alpestrine species such as *P. lonchitis* drop to an accessible level and the keen observer may find the rare hybrid *P. munitum* x *P. andersonii*. The trip to Perry Creek can be combined with a drive through carpets of *Lygodium clavatum* (fig. 3) up to Coal Creek (right next door) for a photo study of the newly described *Cryptogramma cascadensis* nestled amongst the boulders. Also nearby, across the highway there's a popular boardwalk stroll to the Big Four ice caves presenting the explorer with a lowland opportunity to see *Thelypteris quelpaertensis* (syn. *Thelypteris limbosperma, Oreopteris quelpaertensis, Dryopteris quelpaertensis, Thelypteris oreopteris, Oreopteris limbosperma, Dryopteris montana* - oh my!)

The Olympic Peninsula is a deservedly popular tourist destination and crosses climatic zones from coastal to alpine. Travelers can marvel at the changing moods of the Pacific Ocean while watching shore birds swooping around *Polypodium glycyrrhiza* festooned sea stacks. Or they can combine an alpine garden pilgrimage, which should include a fern or two, with a visit to Hurricane Ridge with its panaramic view of the dramatic peaks of the snow-covered Olympic mountain range. Yet another opportunity to explore is presented by the temperate rain forest. A venture up the Hoh Valley leads to an old growth forest draped with curtains of *Selaginella oregana*. Farther south trails traversing habitats from bogs to the misty vicinity of waterfalls around Lake Quinault offer a range of opportunities for viewing lush thickets of ferns. (While there a salmon lunch or dinner at the charming Lake Quinault Lodge won't hurt the memories either!)

Fern canyon on the Pacific Ocean at Prairie Creek Redwood State Park in California's redwood forest is shrouded with cascading colonies of *Adiantum aleuticum*. The canyon runs half a mile along a small creek surrounded by sheer walls of ferns. The hike down and back from the visitor's center gives a redwood's woodland experience and is not strenuous. A road (not suitable for RV's etc.) also winds down to the trailhead on the beach. Either way it is an inspirational sight and we've been fortunate enough to see Roosevelt elk grazing on the beach every time we've visited. It is near Humboldt on Highway 101. Along the way be sure to include a drive along the Avenue of the Giants where the redwoods are magnificent.

PUBLIC GARDENS FEATURING FERNS:

The most comprehensive collection and display of hardy ferns in a public garden in Washington state is the growing collection of the Hardy Fern Foundation housed at the Rhododendron Species Botanical Garden, a 24 acre reserve at Weyerhaeuser corporate headquarters in Federal Way. Established in Oregon in 1964 with a mission of conservation, research, acquisition, (the present site was planted in 1974), The Species Foundation is internationally recognized for its role in selecting and displaying the finest available specimens of rhododendron species. The garden's varied terrain with woodland, pond and alpine areas is not exclusively planted with rhodies, however, and is the primary test site for the Hardy Fern Foundation. The HFF is a young (founded in 1989) organization that is testing ferns for hardiness and ornamental value at sites throughout the U.S. and Canada. Following a modest initial planting the fern collection has grown and now includes several hundred plants in over 100 taxa. New plants are added as they are propagated and become available.

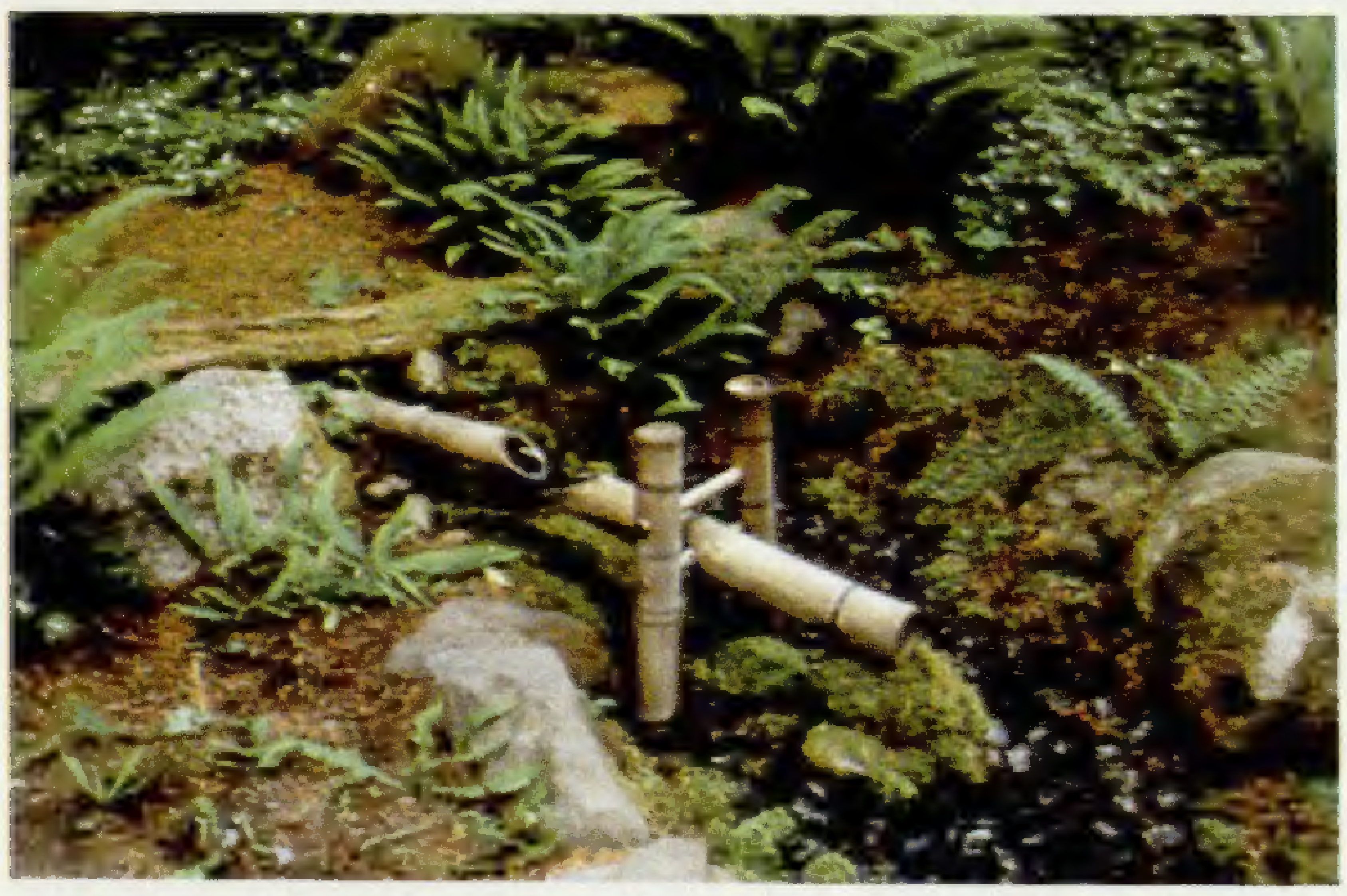

Fig. 1 *Polystichum munitum* and *Blechnum spicant* - Bloedel Reserve.

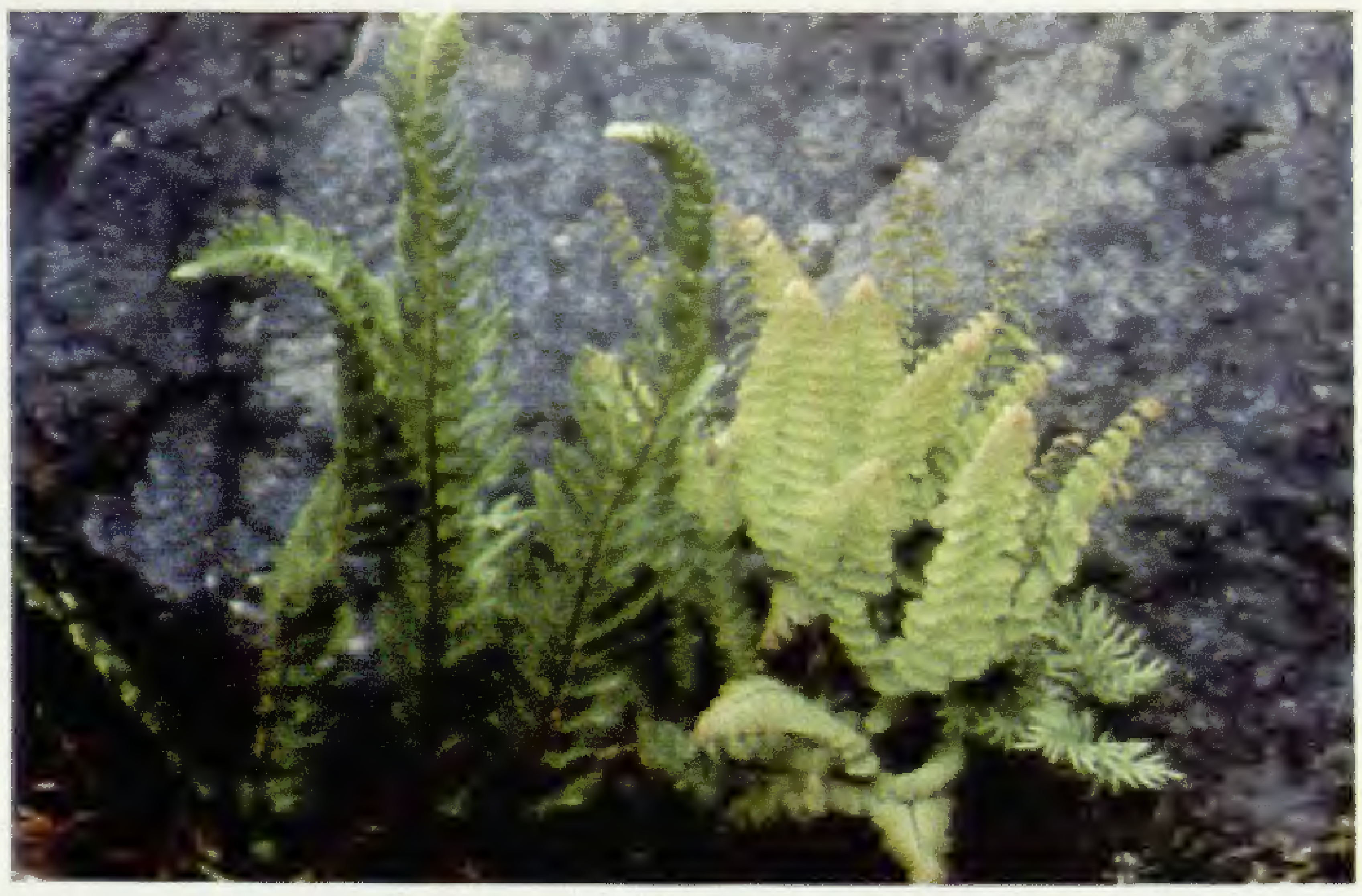

Fig. 2 *Polysticum lemmonii* and *Adiantum aleuticum* - Cascade Mountains Washington State.

The Kitsap County Bainbridge Island Library may sound like an unlikely site for a fern garden, but this award-winning garden is the newest in the growing list of Hardy Fern Foundation display gardens. HFF board member John van den Meerendonk designed the one-acre garden incorporating an extensive variety of ferns. This is a peaceful garden with a meandering stream and a setting that encourages quiet reflection. The Friends of Libraries U.S.A. recently deemed it "the most beautiful, community-centered library garden in the United States" while awarding it first place in the "Grow Together Garden Contest" a contest jointly sponsored with Storey Publishing. Not only is it beautiful but it has successfully increased public awareness of the diversity of the fern world (not all ferns look alike!) The garden can be reached by ferry from Seattle and the trip can be extended with a visit to the nearby Bloedel Reserve for a full day's excursion. The reserve, open to the public by reservation, is the 150-acre estate garden of a timber baron and garden enthusiast who with his wife created massive displays primarily of northwest natives. Here *Blechnum spicant* flourish in the quiet company of assorted mosses and other native woodland species in what is primarily a tranquil second growth timbered shade garden. There is a large lake where swans are bred on the property and natural stands of *Polystichum munitum, Dryopteris expansa, Polypodium glycyrrhiza* and *Equisetum* surround the setting. There may not be a great variety of ferns but the garden with its grand vistas and mass plantings is about as close to a British estate garden as we can come in the Pacific Northwest.

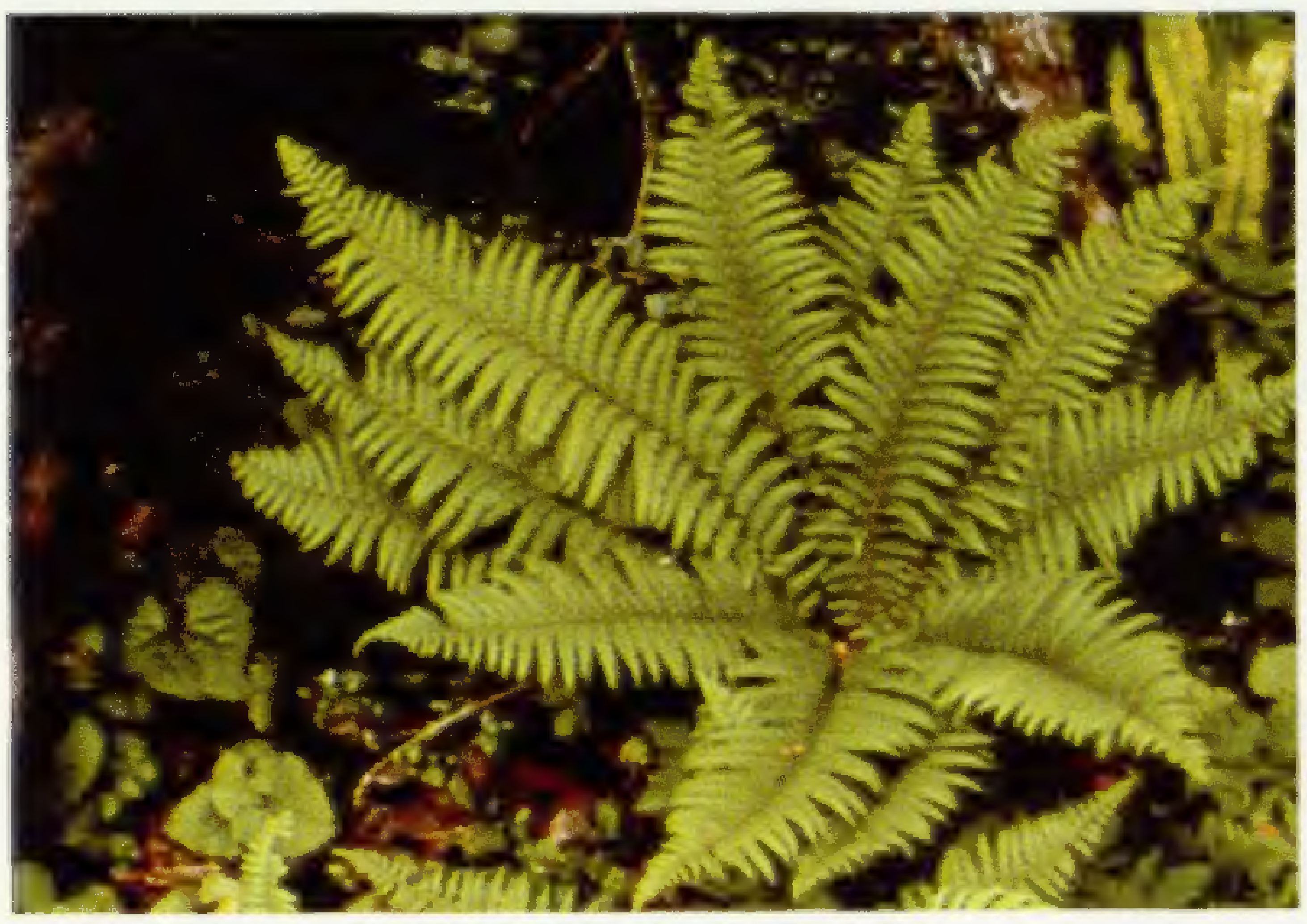

Fig. 3 *Polystichum andersonii* - Garden of Jocelyn Horder

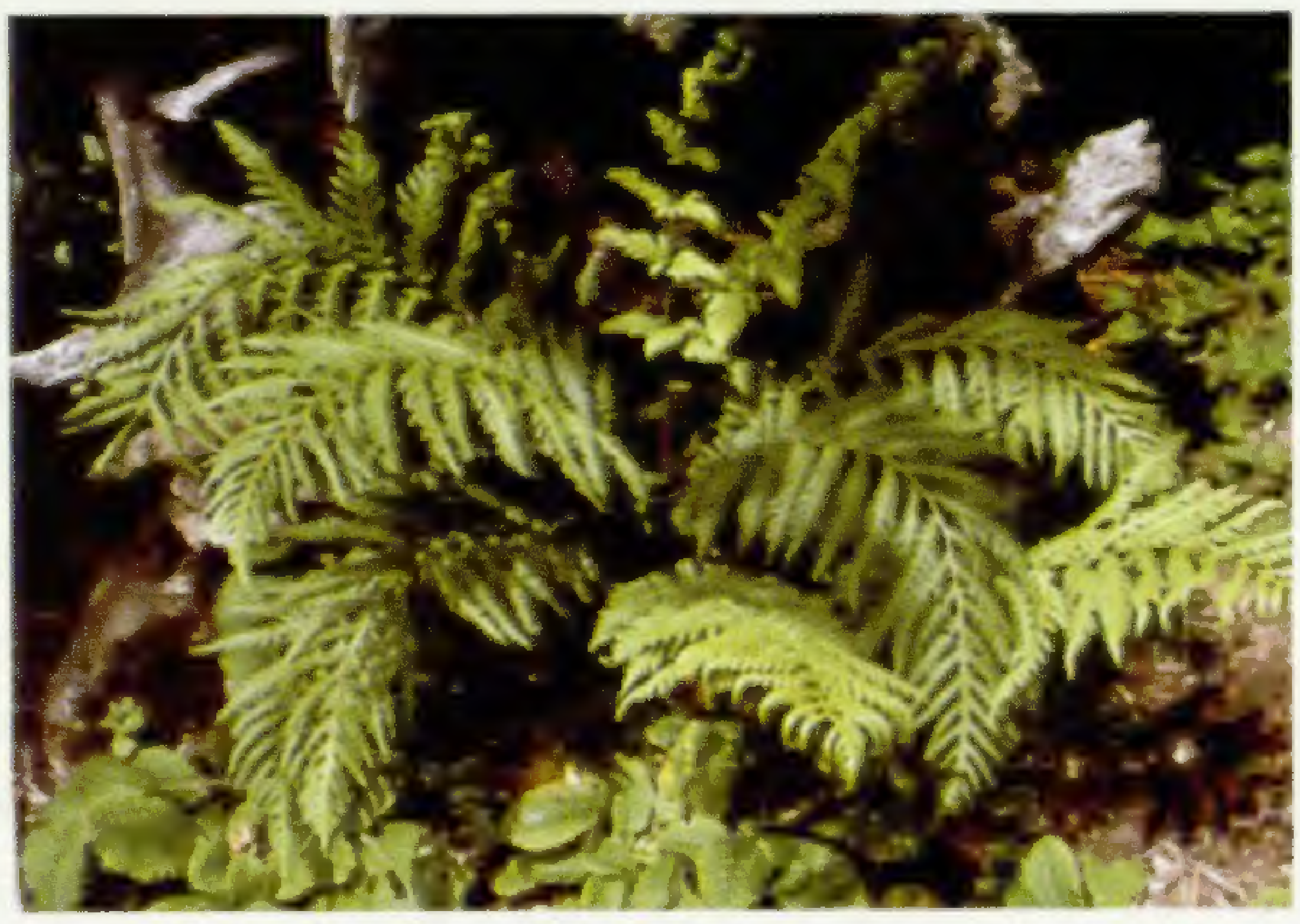

Fig. 4 *Woodwardia fimbriata* - Elandan Gardens

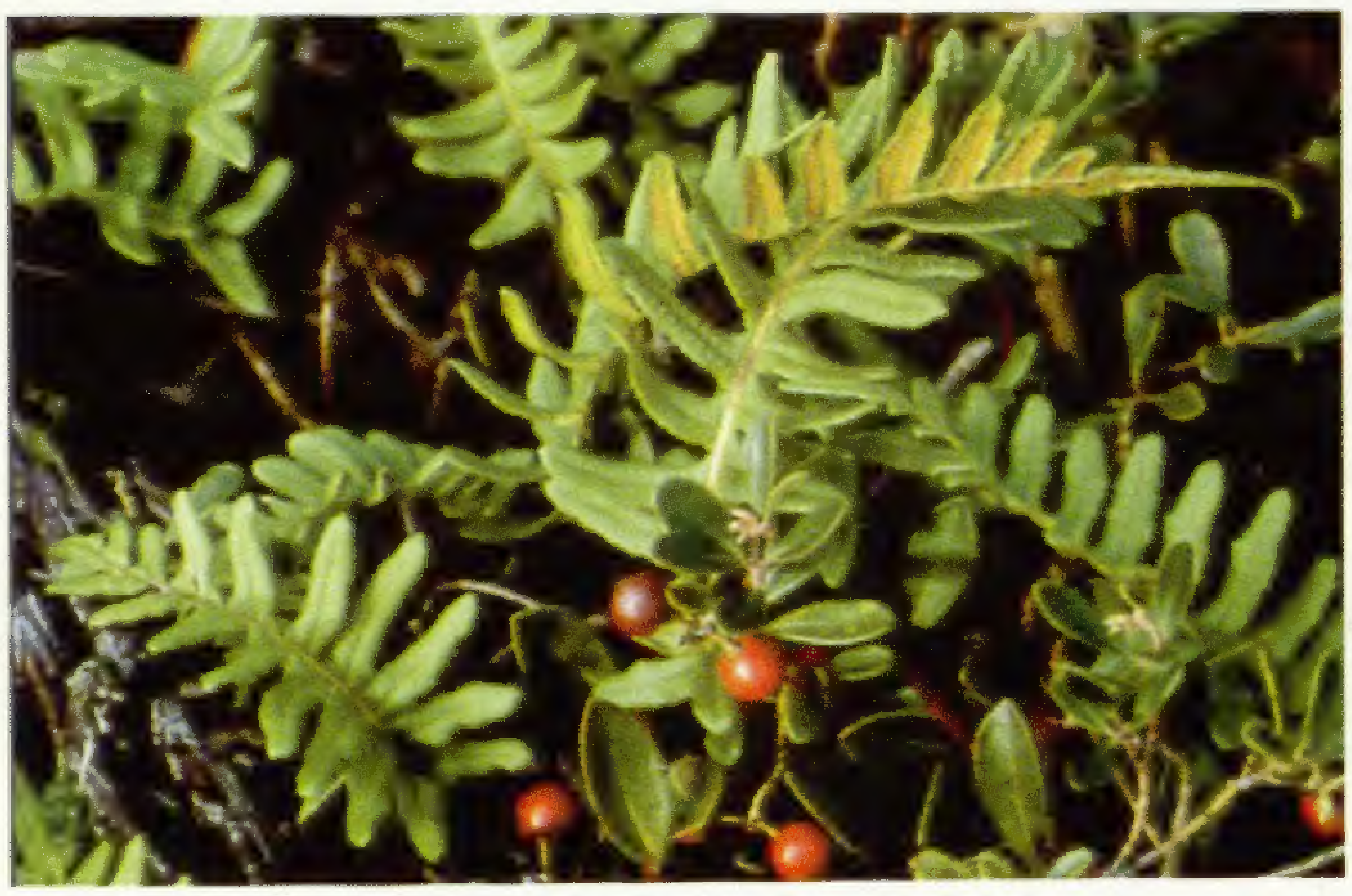

Fig. 5 *Polypodium glycyrrhiza* - State of Washington coast

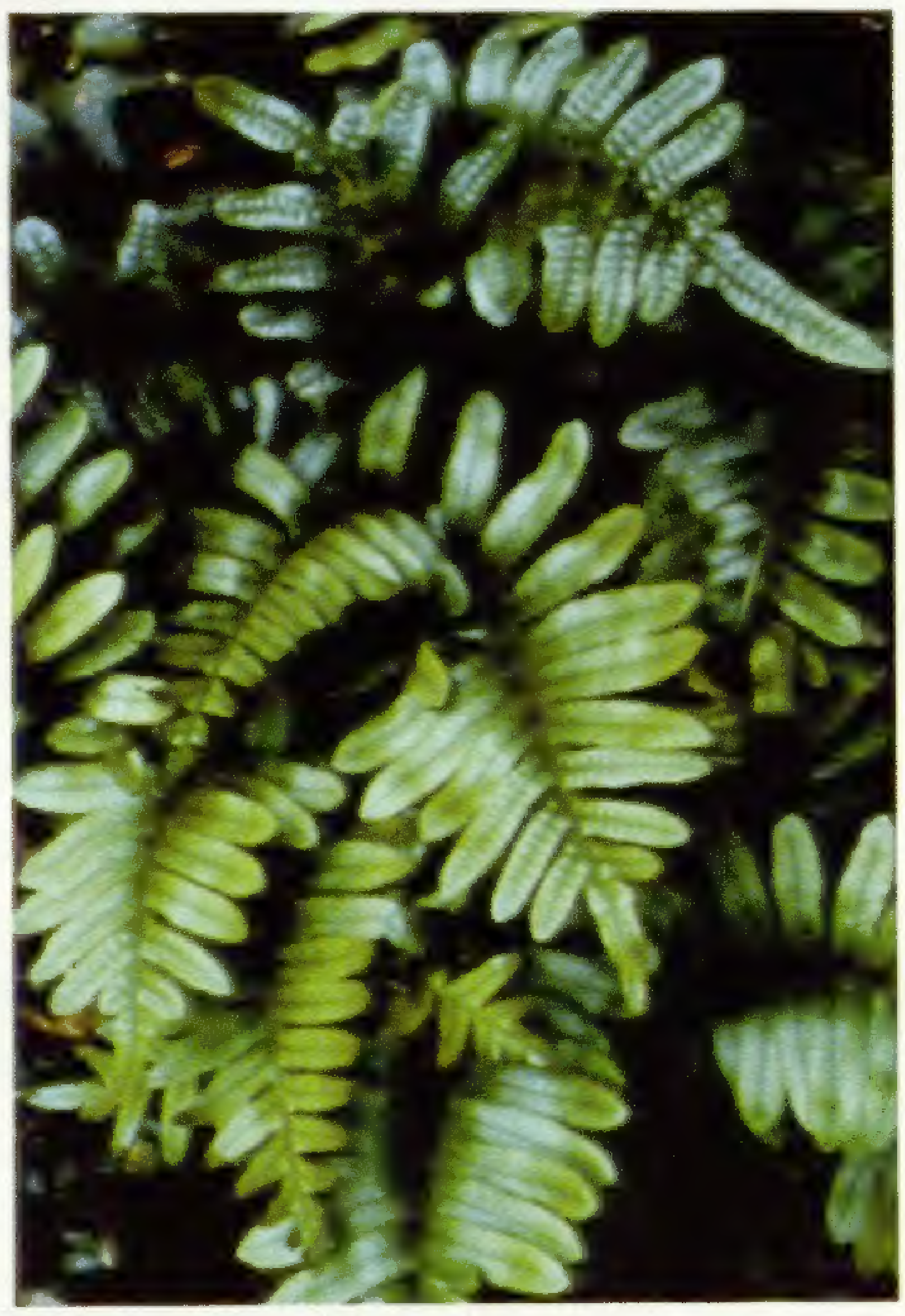

Fig. 6 *Polypodium scouleri* - Garden of Sue and Harry Olsen

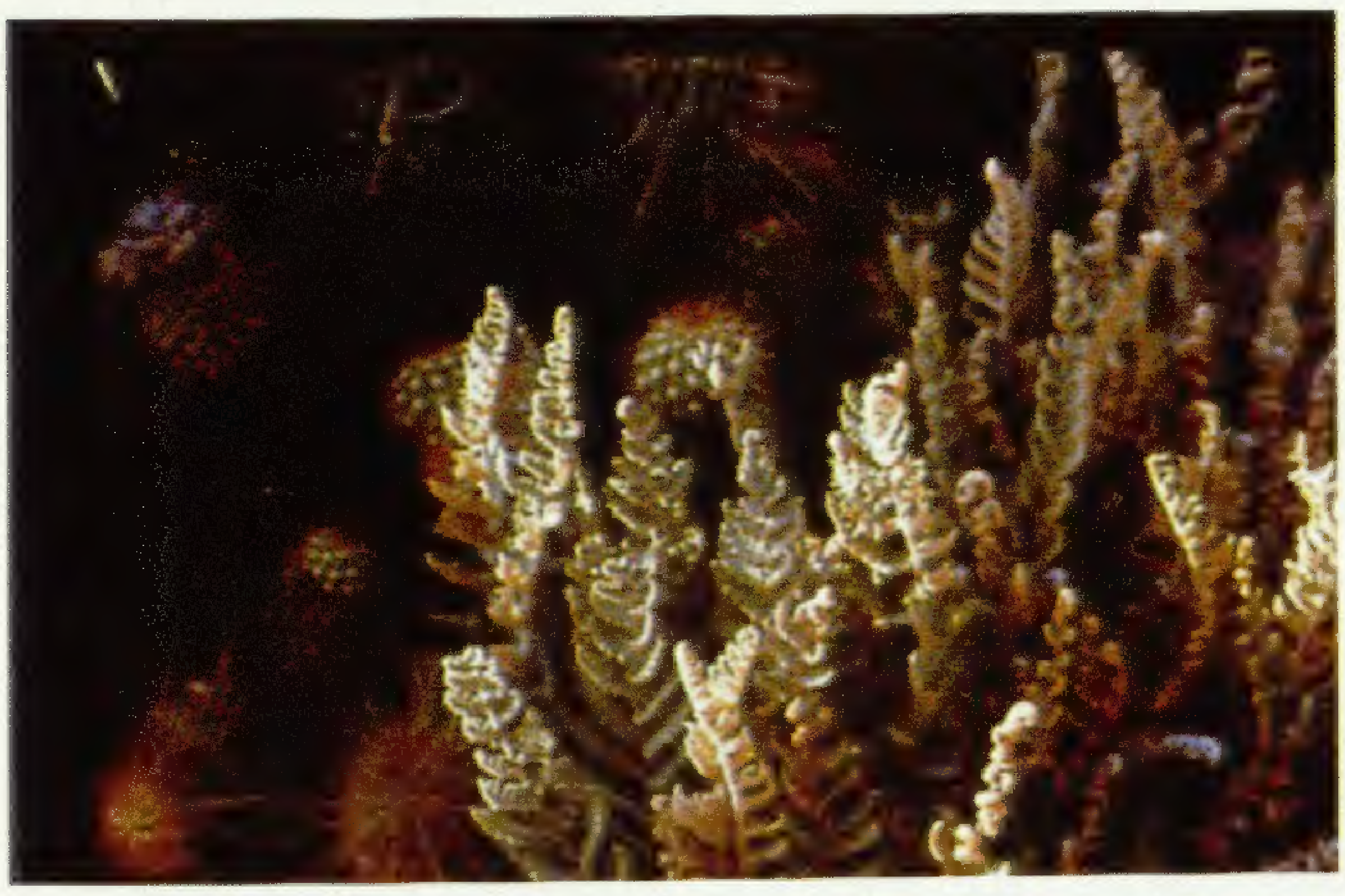

Fig. 7 *Cheilanthes buchtienii* - University of California Berkeley Botanical Garden

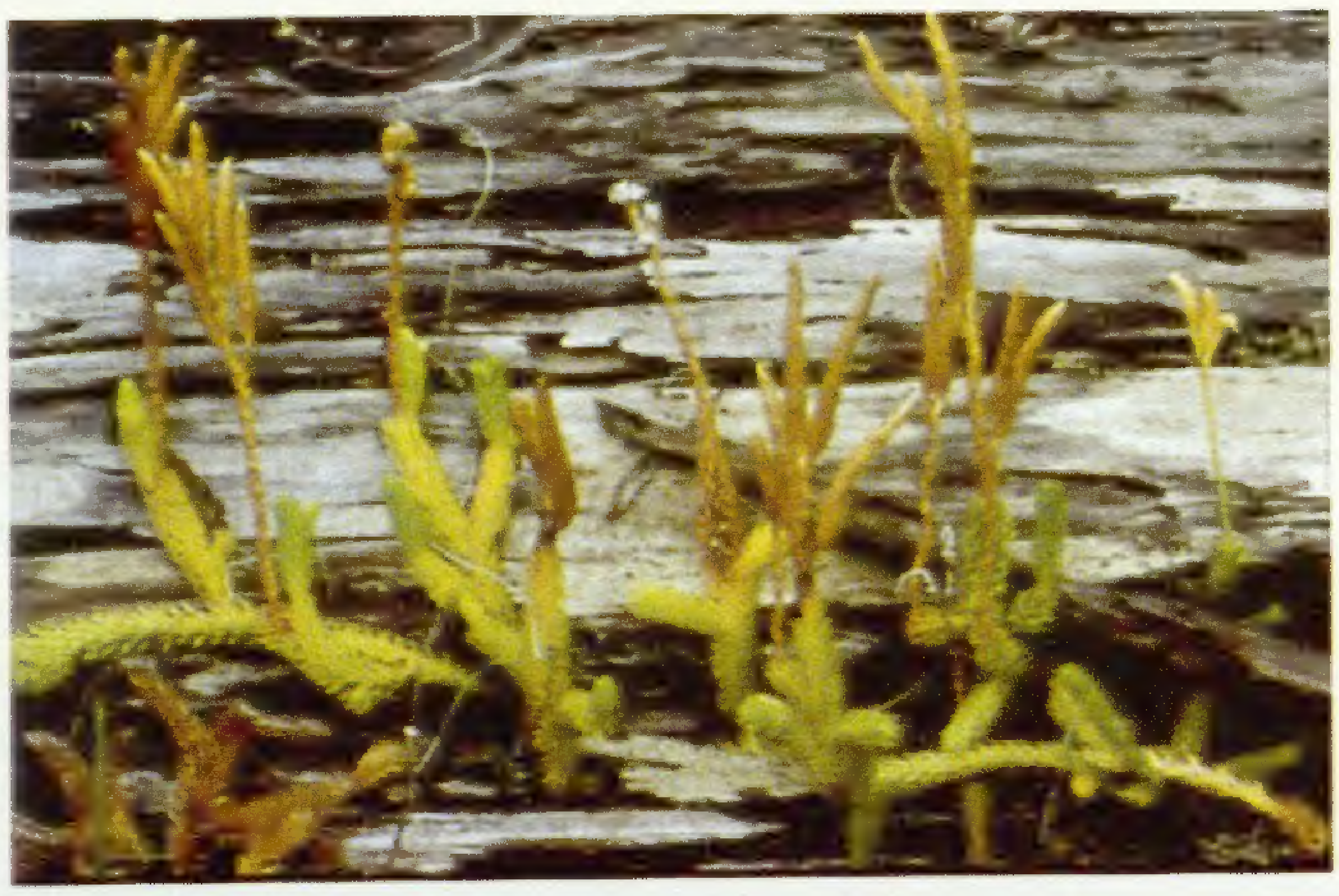

Fig. 8 *Lycopodium clavatum* - State of Washington coast.

Elandan Gardens on the shores of Puget Sound in Gorst (what a name!) WA is a 6-acre masterpiece on what was once a landfill. Creatively designed and maintained by Dan Robinson an internationally recognized master bonsai artist, the garden is a living museum for over 150 of his handsomely gnarled and shapely specimens. These are not your tiny plants in pots, but large scale lovingly tended unique artistic works that are set amongst hand chosen huge (to 8 tons) mossy boulders and blackened snags. Native ferns especially *Blechnum spicant, Polypodium glycyrrhiza, Adiantum aleuticum* and *Polystichum munitum* are blended into the landscape complementing the displays. *Azolla* floats in a barrel with fellow aquatics while *Woodwardia fimbriata* stands majestic in front of weathered driftwood. This unique garden is a scenic one-hour ferry ride from Seattle and while not a garden to visit for great numbers of ferns, it is to be admired for their presentation.

Well removed from the Seattle area, the Botanical Garden at The University of California, Berkeley houses one of my two favorite xeric fern collections (the other being the garden of BPS members, Doreen and Clive Brotherton). There are 500 accessions of ferns and fern allies recorded for the 34-acre property that includes a conservatory for tropicals. The garden is subdivided into numerous specialized garden rooms from California natives to rhododendrons to collections of plants from 'down under'. It is the desert garden that captivates me, however, with its magnificent botanical smorgasbord of the best cacti, succulents and of course xeric ferns. Great swathes of assorted *Cheilanthes* (fig. 7) are punctuated with desert companions. *Notholaena, Astrolepis, Pellaea* and *Argyrochosma* nestle in luxury with their roots cooled by sheltering rocks and encouraged by sharp draining sandy soil. Elsewhere in the garden trees ferns are equally at home and all of this is framed with a view of San Francisco. It is very easy to spend at least a day exploring this horticultural treasure.

PRIVATE GARDENS:

There are so many outstanding private gardens with fern treasures in the Seattle area that it would require another article to adequately describe them individually. Let it be said, however, that Pteridomania is alive and well in the Pacific Northwest where many of us were gently lead into the field and encouraged by the patient coaching of Seattle's late Neill Hall, the Curator of the American Fern Society's Spore Exchange for many years.

While this sampling has been written with an eye towards the proposed BPS Field Excursion to the Pacific Northwest in 2003, I sincerely hope that any fern lover who passes this way will enjoy our woodland wonderland.

Note - for the cyberlinked more detailed information can be found at the following sites:
Bloedel Reserve: http://www.bloedelreserve.org
Elandan Gardens: http://www.elandangardens.com
Hardy Fern Foundation:http://www.hardyferns.org
Prairie Creek Redwoods State Park: http://www.llbean.com/parksearch/parks/html/15101gd.htm
Rhododendron Species Botanical Garden: http://www.halcyon.com/rsf/
University of California Berkeley Botanical Garden: http://www.mip.berkeley.edu/garden/

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HUMAN HEALTH RISKS FROM SPORES? - A REVIEW

P.H.Hainsworth, Station House, Achnashellach, Strathcarron, Ross-shire IV54 8YU

The authors of this article in the Fern Gazette 1999, (Vol.15, part 8, pp.275-287), were exceedingly industrious to dig out some 60 references to this subject. A few were concerned with effects on humans directly, but mostly with experimental work on laboratory animals on simply on the extraction of possible damaging materials from ferns (which do not differ in this respect from other garden plants and vegetables).

I have not so far found any allergic reaction to ferns or fern spores myself but having much first-hand experience of the incredible potency of allergens in Himalayan Primulas and a few other plants, this is something well-worth looking out for (itchy fingers). I recommend the use of plastic or rubber gloves for handling plants so identified.

The article worries me not a little for its possible effect on the spore exchange and for fern popularity generally. It is also the sort of thing that the media exploit for their own ends. Skimming through the article for its salient points could well make some people never touch a fern again. But, in fact, the only experimental work giving useful details quotes mice being force-fed 0.2 gm of bracken spores on 10 occasions. A mouse (at least our highland mice) weighs about 20 gms, which means a hundredth part of its body weight in spores was force fed on each occasion. Brought up to a human scale a rather small person of 50 kilos (110 lbs) would have to be fed a plateful of 500 gm or about 1 lb of bracken spores at each meal of a plant already known to be poisonous. The marvel is that the mouse survived this treatment at all. I am sure that we wouldn't. So although these experiments may prove a point it is not a very practical one.

When figures of aerial spores are mentioned we start with a negligible few hundred spores near particular fern plants to tens of thousands in sporing bracken stands. This latter is about the same sort of scale as grass pollen and could trigger the same sort of reaction. It has not so far been demonstrated although the writers are looking into it. Living in what is arguably the most fern infested part of Britain I have yet to hear of anyone complaining.

For me, the revelation that most stands of bracken do not spore at all was a surprise. I had always thought that the bracken was not yet ripe for sporing and that the pinnule edges had not unrolled, but I confess to having been puzzled at times.

As far as collecting and packeting spores for the exchange is concerned I shall not be taking any extra precautions. We get enough "contaminants" in our spores as it is so any collectors who raise clouds of spores around their heads while packeting we would rather not know about.

NOTEWORTHY FERNS OF THAILAND

By T. Boonkerd

This CD-ROM (Reviewed in the last Pteridologist (Vol/3 pt 4, p. 104) is now obtainable at a special price for BPS members of US$25 (including postage) from T.Boonkerd , Department of Botany, Faculty of Science, Chulalongkorn University, Bangkok 10 330, Thailand.

The computer resolution required to run the disc is
- 90486 or higher based p.c., 16MB RAM
- Run microsoft windows Version 3.1 or higher.
- SVGA card and monitor with 640x 480 pixel resolution, 64K colour.
- CD-ROM drive (double speed or higher).

THE FERNERY, DANESBURY PARK, WELWYN, HERTS

Patricia Watt, Voluntary Warden, Danesbury Park Local Nature Reserve

In a field at Welwyn in Hertfordshire there is a sunken dell, and if you venture into the dell you discover some large blocks of "Sandstone". It is hard to imagine why the "rocks" are there. The "rocks", some old laurel bushes and some wrought iron, rabbit proof fencing are sadly all that remains of a once well known Victorian Fernery. None of the ferns remain. The site is now owned by Welwyn Hatfield Council and is part of the Danesbury Park, Local Nature Reserve. It was part of the large Danesbury Estate; the fernery being built in the Parkland surrounding the House.

Danesbury House was originally built between 1775 and 1776 and was then called St. Johns Lodge. In 1824 William Blake Esq. bought the house and renamed it Danesbury House. The house passed to his son William John Blake in 1852 and he under the guidance of his gardener Mr. Anthony Parsons greatly extended the gardens. One of the new features was the fernery built in an existing chalk pit, a short walk across parkland from the house. Mr Parsons wrote in *The Gardeners Chronicle*, "*I have had to make a hardy fernery, which now contains a magnificent collection of British Ferns, and is well known to many admirers of these truly lovely plants.*" Mr Parsons was well known for raising and developing new varieties of plants. Whilst at Danesbury one finely-crested dwarf golden fern of his origination was named in his honour *Gymnogramma chrysophylla parsonii.*

We know the fernery was built in 1859-60 because the "rocks", which look just like sandstone, are in fact artificial and were ordered from J.R. Pulham and Co. London, in those years. It was necessary to use artificial rocks, as there was no local source of rock in Hertfordshire. The order was for "*Cave, Dropping Well, and Pass, all made in an old chalk pit, for growth of Ferns and other rock-plants.*" The rocks appear to be made using a core of brick and rubble, which was covered in cement. Having weathered they now look very realistic and make an excellent substitute for the real thing and of course are more environmentally friendly! Another example of "Pulhamite" can be seen at Folkestone, in the cliff face, caves, grottoes and zig-zag path constructed by Mr. Pulham so people could get from the Leas to the shore.

Another problem they encountered was getting a supply of water. Although the following articles describe the fernery as having a plentiful supply of water, there was no natural water at the site. There was no spring or stream! We presume it came down from the house. There were huge water tanks at the house and it is recorded that "*There was a horse which pumped water by walking round and round, working a pump from a well in the back yard.*"

The fernery was often written about in the Gardening magazines. The following are some extracts taken from the Royal Horticultural Society Magazine, *The Garden*. (Oct.22, 1881)

COUNTRY SEATS AND GARDENS

Danesbury Park, Welwyn

THE FERNERY. - One of the chief features of interest in the park is the hardy Fernery. It is formed on a sloping bank in a rather deep dell-like valley, overhung with trees and ivy, in the shade of which the ferns seem to delight. This charming spot has been further enhanced in appearance by some rockwork, in many respects decidedly the leading feature of Danesbury. As regards the planting, the various genera are arranged in distinct and well-defined groups, and each group is assigned a position and provided with soil adapted to its requirements; therefore, all have an equal chance of becoming well developed. "Ah," says some one, "but these Ferns are indigenous, and therefore do not require any cultural care; simply stick them in the ground, give them one heavy watering, and then let them take care of themselves. "Yes; that is how many hardy plants are treated; but not at Danesbury. It should be remembered that the conditions under which such plants are placed are more or less artificial. Ferns in their natural state have, as a rule, both soil and locality exactly suited to their requirements; further more, the soil is yearly enriched by the decaying foliage of surrounding trees, which foliage, moreover, forms an invaluable protection to them in winter; therefore, in order to ensure the best results in hardy

Fern culture as well as in that of other hardy plants when under cultivation, care must be bestowed on them, and that is what is being done at Danesbury. In arranging a Fernery, study thoroughly beforehand the habits and requirements of all the species, and allot each such a position as is most likely to produce the best results. At Danesbury the most sheltered, moist spot is given to such plants as the various varieties of the evergreen Blechnums, which delight in a close, damp atmosphere, and the tender forms of Asplenium. Osmunda regalis, which thrives amazingly, is allotted a somewhat low, swampy position, which is, however, free from stagnant moisture. The soil used for these Royal Ferns is a mixture of good loam and fibrous peat. The better deciduous kinds of Polypodium, such as P. phegopteris and P. dryopteris, are also afforded sheltered positions, and in quiet nooks may be found charming groups of such things as Allosorus crispus, the Parsley Fern, and Cystopteris fragilis, a most delicate and graceful fern. The noble Lastrea filix-mas and its varieties occupy the bolder and more exposed positions in company with fine colonies of the evergreen kinds, comprising some unique varieties of the Polystichums, Scolopendriums, Polypodiums, &c. A plentiful supply of water is available for use when requisite in the fernery at Danesbury, and by means of a hose attached to a hydrant abundant soakings of water can be given during long continued drought - a matter of much importance as regards the welfare of the plants, a contingency that should, where practicable, be always provided for, seeing that moisture is an essential element as regards the wellbeing of all Ferns. H. Bailey"

Another extract from about the same date:-

GARDEN MEMORANDA
DANESBURY, NEAR WELWYN, HERTS, THE SEAT OF W. BLAKE, ESQ. -

"*In the park is a hardy Fernery, situated in a dell, and reached by means of a good gravel walk. It is associated with some large trees, which are surrounded by Laurels, &c., which aid in keeping the rougher winds away from the more tender kinds of Ferns, and the whole is inclosed by substantial rabbit-proof fencing. Entering under an archway, formed of grotesque-looking wood, we proceed a few yards, and an interesting scene presents itself, the imitation rockwork being in itself worthy of a visit. Here are steps to descend to the level below, formed, as it were, out of hard rock by time itself. On the opposite side is a ravine, over which has been thrown a rustic bridge, whilst nearer to the left, under the more massive upper rock - as is customary - is a capacious grotto, from the rock at the side of which streamlets of pure water trickle down into its basin bed. Here and there, abutting upon the green sward, the rocks appear, cragged and pointed, each having at its base, or upon its bosom, some quaint form which culture, and observation have brought to light. The whole is well backed up by huge boulders, placed here and there, as if they were the work of one of Nature's strange convulsions.*

Let us now note a few of the more distinct and noticeable Ferns found here - varieties essential to all having in view the getting together of a collection, however small. Of Athyrium F.-f. Victoria there is here a fine example, the primitive divisions in which are very narrow, distinctly forked at the base, and varying in their structure so much that they are divergent, crossing each other the whole length of the frond, the apices of pinnae and frond being uniformly neatly tasselled. A. F.-f. coronatum has short, spreading fronds, much crisped and forked at the end, with huge heavy tasselling. There is here a variety of A.Ff.-f.Elsworthii, having the pinnae very much crested, whilst the extremity or point is equal to the best A.F.-f. multipes; of the last there is a fine large specimen with narrow fronds, ending in oft-divided spreading crisped tassels. A. F.-f Grantii is a dwarf upright form, with dense pinnae overlapping each other at and near the points, being divided and crisped. A. F.-f coronans var. nanum has drooping short narrow fronds, the pinnae crested, and the frond ending in a many times divided crest, of large dimensions as compared with the size of this dwarf variety. A. F.-f. grandiceps is dwarf, upright, very densely and heavily crested. Asplenium viride multifidum has here assumed its true habit; a circumstance questioned by some.

Poltstichum angulare grandiceps is a beautiful green-leaved variety, with divided rachis, every division being more or less branched again and again, the individual pinnae ending in *small crests, the terminal points being large crispy tufts. P. a. gracile is a very graceful variety, the pinnules markedly slender near the midrib. P. a. plumosum has a waving pleasing habit : P. a. latipes, a very fine variety, has green fronds, with distant divisions, and sharp-pointed termination : P. a. rotundatum (a very fine specimen) has deep green fronds : P. a. multifido-cristatum has branched fronds, and the pinnae and pinnules are slightly crested. Of P. a. proliferum Wollastoni the best plant here came from Mr. Wollaston's original specimen. P. a. proliferum Footii varies from the preceding only in having smaller fronds and smaller pinnae, but a little wider: this was also obtained from the original plant. Of P. a. Kitsoniae, there is here a fine large plant which has become well established, and consequently is beginning to assume its real habit: it is branched, divided and tasselled. Before leaving this class reference must also be made to the beautiful P. vestitum venustum of New Zealand, which succeeds admirably here.*

Amongst Lastreas is a fine specimen of the rare F.-m. abbreviata cristata; it is a branch-forked and crested variety, of very pleasing appearance ;L. montana curvata has narrow curved fronds; L. opaca (Japanese) has very dark green foliage and is distinct; L. F.-m. crispa, generally supposed to be too tender for our climate, is quite hardy here; it has short fronds and the pinnae fringed ; L. dilitata ramosa has branched fronds, and is tufted. Of L.Standishii there is here a very fine specimen.

Lomaria chilensis is a fine bold Fern with three or four huge fruiting fronds. It is quite hardy.

Amongst the endless varieties of Scolopendriums, ramo-marginatum is distinct, upright, and variably divided, each frond being very narrow and generally lengthy, until the ramose part is reached. The fruit, or seed vessels, frequently show themselves upon the upper side of the frond. Of S. cristatum major, the individual fronds are three times divided and freely tasselled. S. subcornutum, a foot across, is sometimes four times divided, as the frond is ascended, horn-like, with projections. There is here a very distinct and beautiful variety of Adiantum pedatum, the pinnae in which are larger and more indented than the ordinary kind, and undulated ; the rising centre of each frond giving the plant a very pleasing wave-like appearance. Let us conclude with a passing glance at the aquaintances of our youth-the scaly Spleenwort, Brittle Bladder Fern, Green Spleenwort, and other native Ferns, all of which afford pleasing recollections of days gone by.W.E."

I will conclude with the words of W. Robinson in "The English Flower Garden", published in 1883, writes, "In the home counties there is probably not a better Fernery than at Danesbury. It is on a sloping bank in a rather deep dell, overhung with trees and Ivy, in the shade of which the Ferns delight."

ACKNOWLEDGEMENT

I would like to acknowledge that Ann McDonald, Landscape Architect, Welwyn Hatfield Council, did most of the research on which this article is based.

POSTSCRIPT

P. J. Acock

I noted that a J. R. Pulham had been instrumental in reviving the Society along with Jimmy Dyce and Percy Greenfield shortly after the last war. He was the owner of Pulham and Son and in *The Fern Gazette* Vol. 8 p. 203 it is written that his firm was concerned with the building of the Rock Garden at Wisley. In *The Fern Gazette* Vol. 7 p. 190 Pulham briefly introduces himself. Although J. R. Pulham had not been a member when he was asked to be our secretary he worked hard and brought a talent to bear at a critical time in the Society's life. I feel we all owe him a debt of gratitude.

FROND UNFURLING

Martin Rickard, Pear Tree Cottage, Kyre, Tenbury Wells, Worcestershire WR15 8RN.

I am sure most members will have noticed how some species always seem to produce their new fronds earlier in the spring than others. Is this a 'species thing', is it tied up with habitat, plant health, plant age or some other factor? Certainly sometimes different plants of the same species can inexplicably come up at quite different times. This spring I have been around my nursery stock and have noted the following order of unfurling. I would be interested to hear comments of other growers who may agree or may have noticed a quite different sequence.

Order of unfurling:

First batch - about early March here, depending on season of course:

- *Adiantum davidi*, Asia - China.
- *A. venustum*, Asia - India etc.
- *Athyrium otophorum*, Asia - Japan etc.
- *A. vidalii,* Asia - Japan etc.
- *Cystopteris fragilis*, Worldwide, including Europe
- *C. fragilis* var. *sempervirens*, Europe - Atlantic Islands,
- *Dennstaedtia appendiculata*, Asia - India etc.
- *Dryopteris stewartii*, Asia - India etc.
- *Gymnocarpium oyamense*, Asia - Japan etc.
- *Osmunda lancea*, Asia - Japan etc.
- *Polystichum proliferum*, Australasia - Australia.
- *P. polyblepharum*, Asia - Japan,
- *P. yunnanse*, Asia - China etc.

Second batch - late March:

- *Adiantum aleuticum*, North America
- *A. aleuticum* 'Japonicum', Asia - Japan.
- *A. x tracyi*, North America.
- *Arachniodes standishii*, Asia - Japan.
- *Asplenium flabbelifolium*, Australasia - Australia etc.
- *A. trichomanes*, Europe.
- *Athyrium filix-femina* 'Frizelliae', British Isles.
- *Athyrium niponicum* 'Pictum', Asia - Japan.
- *A. rubripes*, Asia - Nepal.
- *Blechnum nudum*, Austalasia - Australia.
- *Cyathea australis*, Australasia - Australia.
- *Cystopteris diaphana*, South-west Europe Central America.
- *C. dickieana*, Scotland.
- *C. sudetica*, Central Europe.
- *C. tennesseensis*, North America.
- *Davallia mariesii*, Asia - Japan.
- *Dennstaedtia davalloides,* Australasia - Australia.
- *D. wilfordii*, Asia - Nepal.
- *D. dickinsii,* Asia - Japan etc.
- *D. erythrosora*, Asia - Japan etc.
- *D. neorosthornii*, Asia - Nepal.
- *D. pseudo-filix-mas*, Central America - Mexico.
- *D. pulcherrima,* Asia - Nepal.

D. uniformis, Asia - Japan etc.
Gymnocarpium fedtschankianum, Asia - Nepal etc.
G. jessoense, Asia, North America.
Microsorium diversifolium, Australiasia - Australia.
Osmunda cinnamomea, North America.
O.gracilis, Asia - Japan etc.
Phegopteris decursive-pinnata, Asia - Japan etc.
Polystichum longipinnatum, Asia - Nepal.
P. makinoi, Asia - Japan.
P. neolobatum, Asia - Japan etc.
P. piceo-paleaceum, Asia - Nepal.
P. setiferum 'Plumosum Bevis', Europe - British Isles.
Thelypteris palustris, Europe - British Isles etc.
Woodsia fragilis, Asia - Japan etc.
W. gracilis, Asia - Japan etc.

These two lists contain a diverse range of ferns but it is interesting that virtually all that flush new growth in mid March are exotic species. Probably it is a daylight effect, i.e. they are used to coming into growth at a certain day length, although in mid-March day lengths are the same all over the world. It might, therefore, be temperature, or some other less obvious factor.

A few years back, Clive Jermy observed that in the Atlantic Isles many species of fern are evergreen when grown in Britain (see *Pteridologist*, 1, 4, pp.188-189, 1987). I thought this might be a related phenomenom in some way, but the only species on both my list and Clive's is *Cystopteris fragilis* var *sempervirens*. In fact the species I list are mainly Asian, with a few from Australasia and North America, but surprisingly few from Europe. *Cystopteris fragilis* and the above mentioned var. *sempervirens* being the most notable exceptions.

Considering how many species of D*ryopteris* I grow, I think it is probably significant that few start growth early in the year. Conversely it is interesting how common early growth is amongst the adiantums and osmundas.

Of course these observations are based on limited information; often a single plant of a given species or cultivar. It is possible that plant health, plant age and plant situation could all be greater factors than the fern type. It is also inevitable that there is a bias in my list, since I have tended to collect the ferns I like. I have also benefited from Christopher Fraser-Jenkins collections over very many years and these have been primarily from Nepal and the surrounding countries.

Any comments on these lists are most welcome.

FERN COLLECTING IN S.TOMÉ (GULF OF GUINEA)

Centro de Botânica, IICT, Trav. Conde da Ribeira 9, 1300 Lisbon, Portugal

The African island of S.Tomé (Democratic Republic of S.Tomé & Príncipe) is situated in the Gulf of Guinea (Fig. 1). It is a small island, about 47 km long by 27 km across (Fig. 2), with an equatorial climate and an average annual rainfall ranging from less than 1000 mm in the north to over 7000 mm in the south-west. There are two main seasons, the dry season, from June to September, and the rainy season from October to May, interrupted by a short drier period in December. In spite of its many natural attractions, the island has not been discovered by mass tourism. It has been noted that S.Tomé is unique in the African continent, due to its high pteridophyte diversity, both in number of species and quantity of individuals. In fact there are 138 species of pteridophytes in the island, of which 8 are endemic. These taxa are mainly distributed in the mountain forests. However, there are also many that can be found at lower altitudes, in secondary forests or plantations.

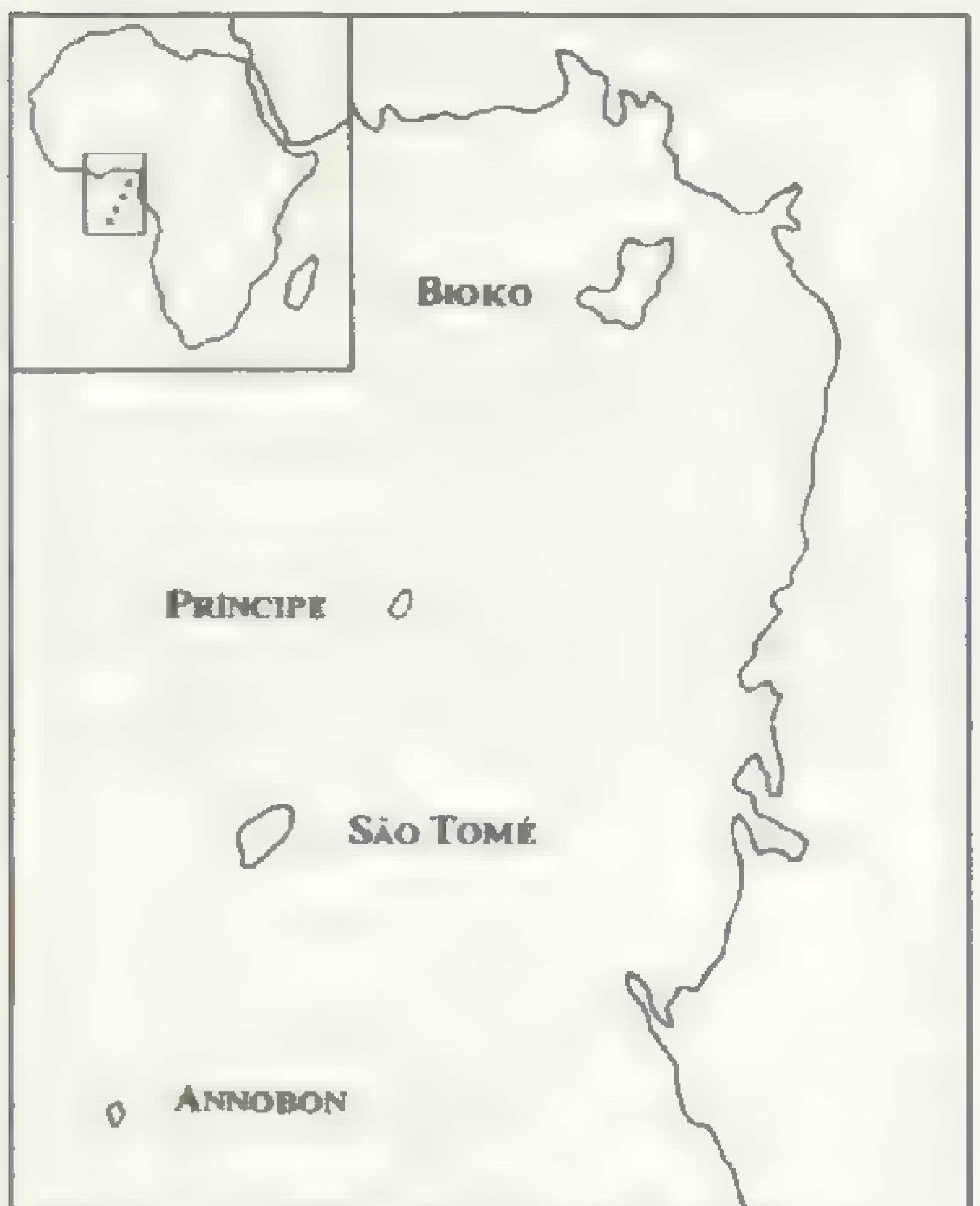


Figure 1. The Gulf of Guinea.

During the 19th century most of the lowland area below 800m altitude was cleared for the plantation of cocoa. At that time S.Tomé was the main cocoa producer in the world. Today cocoa production has decreased but the island is still divided into plantations ('roças'). After the country's independence, in 1975, some have been abandoned and reverted to secondary forest. Other areas of the island have remained unspoiled due to their difficult access.

Visiting under-explored areas of the island requires a considerable amount of hiking mostly under difficult conditions. However, there are many areas with easy access that offer many attractions for the fern enthusiast.

I visited the island as part of a botanical expedition in July 1999. Although the purpose of this expedition was the study of a group of flowering plants, I had the chance to visit areas where pteridophytes are abundant, collect specimens and study them later.

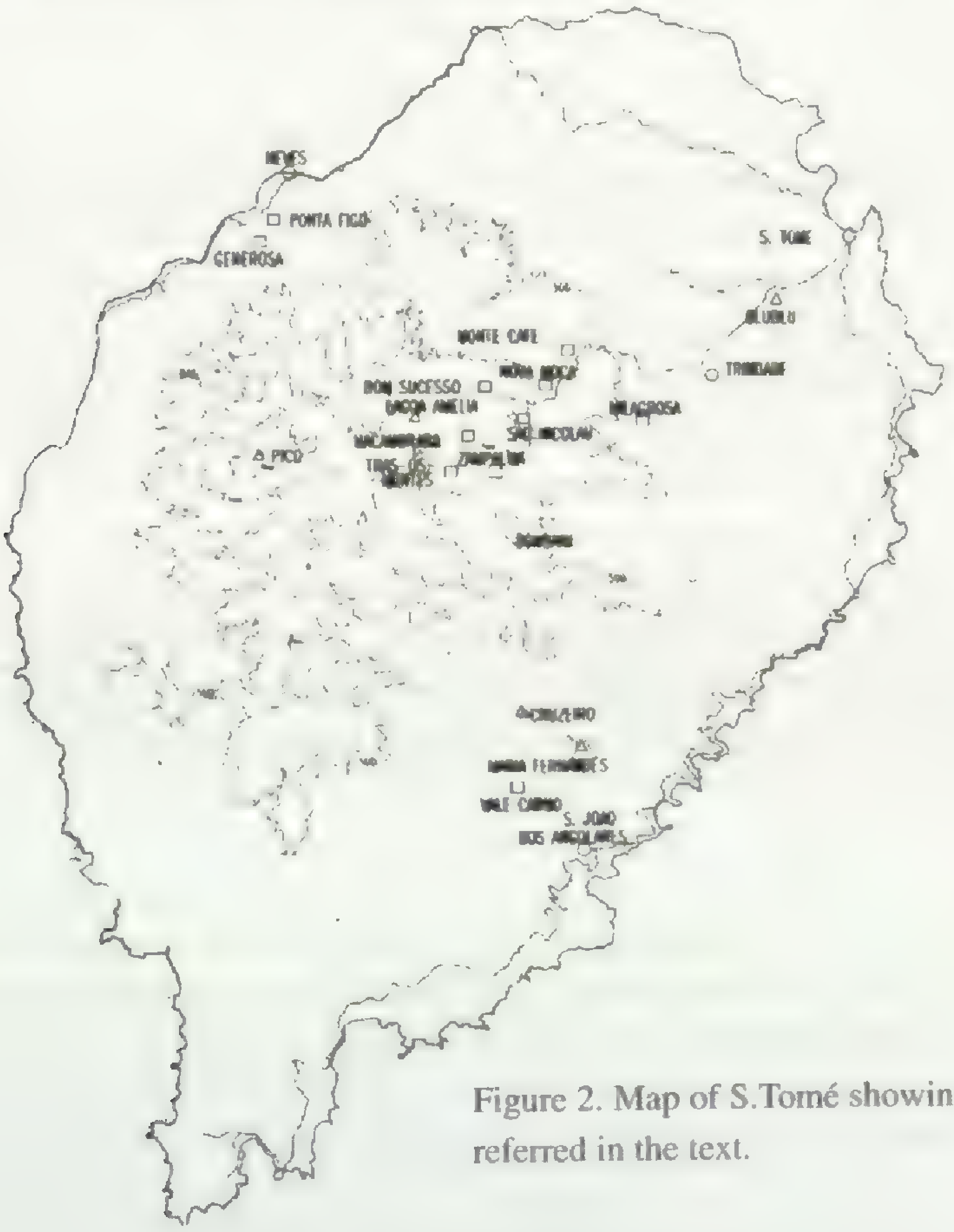


Figure 2. Map of S.Tomé showing the localities referred in the text.

The starting point for several forest tracks is Bom Sucesso. This plantation was converted into a research centre funded by the EU project ECOFAC. There is a small herbarium and a living collection of orchids, and accommodation for visitors is available. Although Bom Sucesso is only about 15 km from the city of S.Tomé, getting there is not very easy and requires a four-wheel drive vehicle. We followed the ECOFAC vehicle that makes the journey daily, taking the staff to the station in the early morning and bringing them back to the city in the afternoon. After several stops and two burst tyres (both on paved roads!) we finally reached Bom Sucesso, a few hours later than scheduled.

The road passes through the town of Trindade and the Roça Monte Café, once the most important plantation in the island. Monte Café is also a historical collecting locality, having been visited by the famous botanical collector F. Welwitsch in 1860. Welwitsch collected many pteridophytes in this area, most of which have not been re-collected there since. A short distance away from this plantation is Roça Nova Moca, where the unpaved track to Bom Sucesso starts. However, before entering this Roça, it is worth stopping and walking along the road towards Sao Nicolau. It is a short and pleasant walk along a road that crosses a beautiful waterfall and where many pteridophytes can be observed. Alongside common ferns such as the African *Dryoptens penthen*, the ubiquitous *Nephrolepis biserrata* with fronds up to 2 m long (Fig. 3), *Dicranoptens linearis* and *Diplazium proliferum*, are less common pteridophytes like the West African species *Huperzia warneckei, Selaginella mollen* and *Selaginella thomensis*. Back on the Nova Moca road, where the 4km-track to Bom Sucesso starts, one can see on the left hand side a big jack-fruit tree covered with an amazing display of the African epiphyte *Drynaria* sp. (Fig. 4). From Bom Sucesso there are footpaths leading to Lagoa Amélia and Pico. The track to Pico takes more than one day to complete and requires some fitness as it involves a fair amount of climbing. However, it may be rewarding, as some rare pteridophytes can only be observed there. For example, *Athynum newtonii* is a rare species that occurs in Uganda and Tanzania, and was collected once in the Pico. The two endemic species *Grammitis mollen* and *G. tomensis* are also apparently restricted to the Pico. None of these rare or possibly extinct species has been recorded during this century.

The track to Lagoa Amélia is an easy journey that allows for the observation of many species that are also found on the way to Pico. Lagoa Amélia is the crater of an extinct volcano. It is covered with vegetation and usually flooded (hence the name lagoa=lake). The track starts by crossing vegetable fields near Bom Sucesso, and then proceeds along the volcano wall up to the ridge, and down a steep descent towards the crater.

Around Lagoa Amélia, in an area of less than 4km^2, fifty-five species of pteridophytes have been recorded. Among these are the beautiful tree fern *Cyathea manniana*, which can be easily observed on the edge of the crater (Fig. 5), and the endemic *Cyathea welwitschii*. Along the track, the African *Coniogramme africana* and the palaeotropical *Marattia fraxinea* are conspicuous and easily spotted. The more alert visitor will also see the delicate African epiphytes *Asplenium sandersonii* and *A. dregeanum* subsp. *brachypterum*, and the beautiful endemic *A. megalura* var. *mollen*, to cite three of the 11 species of *Asplenium* that have been recorded in the area. *Pteris paucipinnata*, an endemism to the Gulf of Guinea and the rare *Pteris ptendioides* can also be seen on this track. The actual crater (Fig. 6) is densely covered with *Nephrolepis pumicicola* (Fig. 7), a species distributed in Cameroun and Bioko, found on lava ground, and the cosmopolitan club-moss *Lycopodiella cernua*. The West African *Asplenium biafranum* can also be observed there. Nearly all plant or animal collectors that have travelled to S.Tomé have explored Lagoa Amélia. At present many amateurs and tourists visit this place. This increase in the frequency of visitors may eventually be a problem for the conservation of this fragile habitat.

Although the visitors tend to aim at trekking to the Pico or Lagoa Amélia, these areas are well collected and relatively well studied and it is unlikely that they will reveal new findings to the non-specialist. On the other hand, some areas of much easier access are rarely visited. There, one has the chance of registering new areas of distribution or even re-discovering species that have not been recorded for a long time.

An area explored during this expedition is not far from the capital and has relatively easy access. After passing the town of Trindade and the Roça Milagrosa, there is a road junction leading to Zampalma on the right and Bombaim on the left. Both ways provide interesting walks, offering the possibility of observing several species of pteridophytes. The road to Bombaim has the bonus of a beautiful waterfall with the rock walls covered with *Selaginella molleri* (Fig. 8). It is possible to drive along both roads but reaching Zampalma may require some driving skills. During the rainy season the road is often blocked by fallen trees and may present considerable difficulties.

Conspicuous along these roads, are several large ferns such as *Diplazium proliferum* (Fig. 9) and *Diplazium arborescens*, with fronds up to 2 m long, *Dryopteris pentheri*, and *Pteris atrovirens*. The endemic tree fern *Cyathea welwitschii* can also be seen, as well as less common smaller ferns such as *Asplenium unilaterale* and *Trichomanes rigidum*. *Pneumatopteris venulosa*, an endemic to Equatorial Guinea and the islands in the Gulf of Guinea, has also been recorded in this area. A careful search may reveal rare ferns. For example, we re-discovered *Bolbitis acrostichoides* on the road to Zampalma, a species that had not been recorded in the island since the last century.

From Zampalma, with the help of a guide, it is possible to explore forest tracks leading to other plantations. Arthur Exell, an English botanist who wrote the definitive catalogue to the plants of S.Tomé e Príncipe, thoroughly explored the track leading to the Roça Macambrará in 1932. He stayed for one month in Macambrará, which was then called Vanhulst, and collected extensively in the surrounding area. Another track leads to the Roça Trás-os-Montes, of which not much is left to see. Trás-os-Montes was once accessible by car, but now it is restricted to a few wall ruins hidden by dense vegetation. Likewise, the beautiful main house of Zampalma no longer exists, but the plantation is still under exploitation.

Another lowland area of easy access with interest for observation of pteridophytes is the area of Angolares. Taking the scenic coastal road to the south of the island, from the capital, we pass the plantation of Água Izé and the town of Ribeira Afonso, two localities where the halophytic *Acrostichum aureum* can be observed. Along the road *Nephrolepis biserrata* is abundant, as well as the palaeotropical epiphyte *Phymatosorus scolopendria* (Fig. 10). This species is frequently found growing on walls. The introduced American species *Pityrogramma calomelanos* is common on road edges. The road leads to Angolares, an area where a small African kingdom maintained its independence well into the 19th century. It was apparently founded by the slaves that survived the sinking of a ship off the coast of the island. In this area we can still find rare lowland pteridophytes. Since Angolares was only colonised by Europeans at a later date it is possible that its vegetation was less affected by human settlement.

Before reaching the town of Sao Joao dos Angolares, there is a right turn leading to Roça Sao Joao. In this plantation there is a cultural centre that is worth visiting. From there a bumpy, muddy road leads to Morro Gentio, a small mount on the left (385 m of altitude). On the right hand side is Pico Maria Fernandes (861 m. alt.) an under-collected area which needs to be explored (Fig. 11). Peaks such as this are a common sight in the island.

At Morro Gentio, several species of lowland pteridophytes can be seen. If a tree has happened to fall, it will be possible to examine epiphytes such as *Huperzia* sp., the two African species of *Vittaria*, *V. guineensis* and *V. owariensis*, and the rare *Asplenium barteri*. The entire-leafed epiphytes *Microsorum punctatum* and *Asplenium africanum* (Fig. 12) may also be seen in this area. We also found *Pyrrosia lanceolata* (Fig. 13) in this place. It is a locally rare palaeotropical epiphyte recorded only twice in the island. Continuing along the road, the walk will lead to a derelict plantation called Vale Carmo. From there, accompanied by a guide, one can continue towards Cruzeiro or down the valley of the Rio Angobó, where pteridophytes are plentiful, from the tree-fern *Cyathea welwitschii* to the tiny *Trichomanes erosum* growing on rocks. During this expedition we wanted to assess the conservation status of a rare endemic species of *Selaginella*. *S. monodii* was described based on a single collection dating from 1956, from a locality named Blublu. It was re-collected at another locality in 1991, in Roça Generosa. These two collections were the only material available for study. It was not known if the species still existed in its type locality, or whether or not it required conservation measures.

Blublu is small waterfall situated in the middle of cultivated fields, off the Trindade road, a

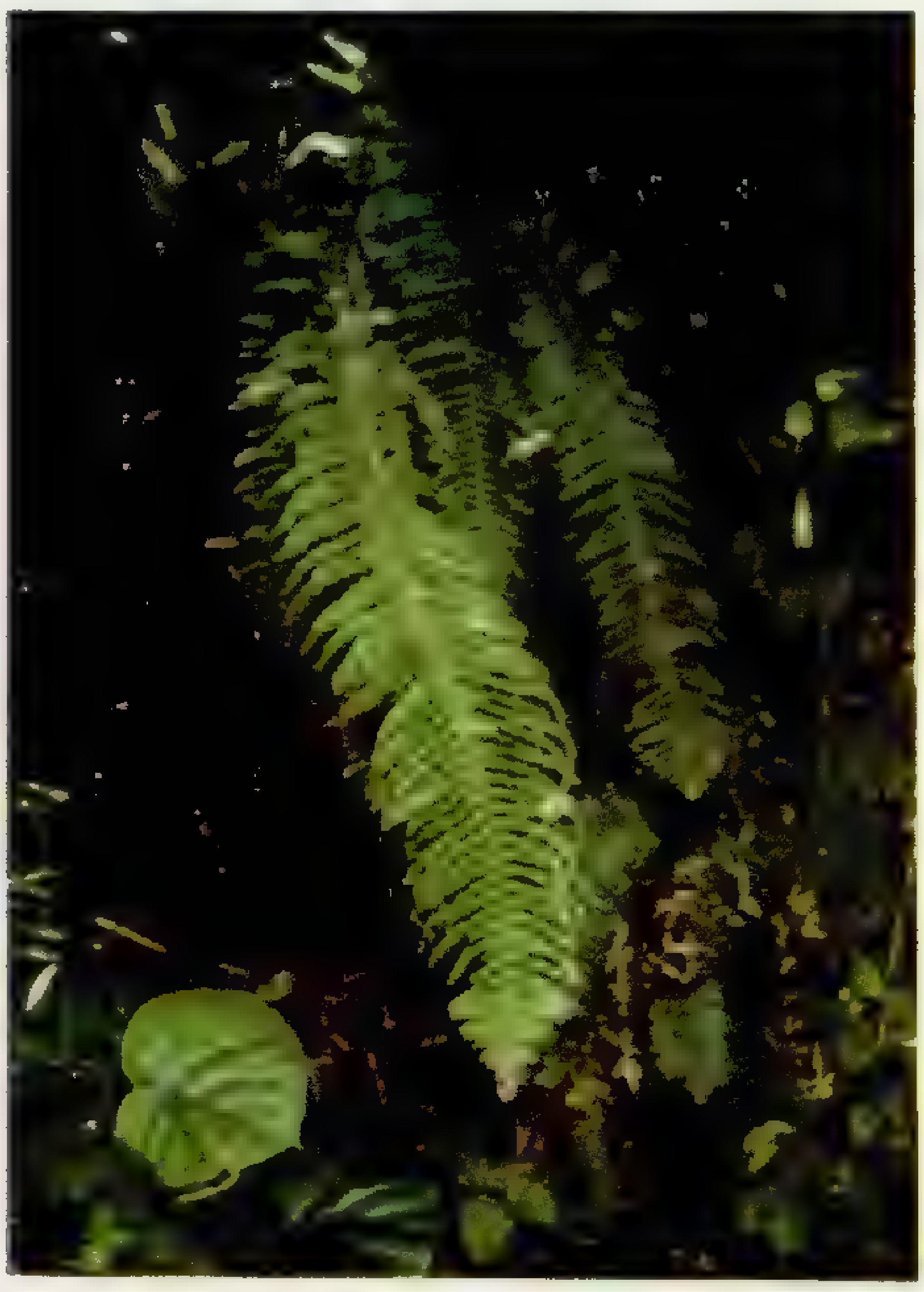


Fig. 3. *Nephrolepis biserrata,* a very common species.

Fig. 4. *Drynaria* sp. on a jack-fruit tree.

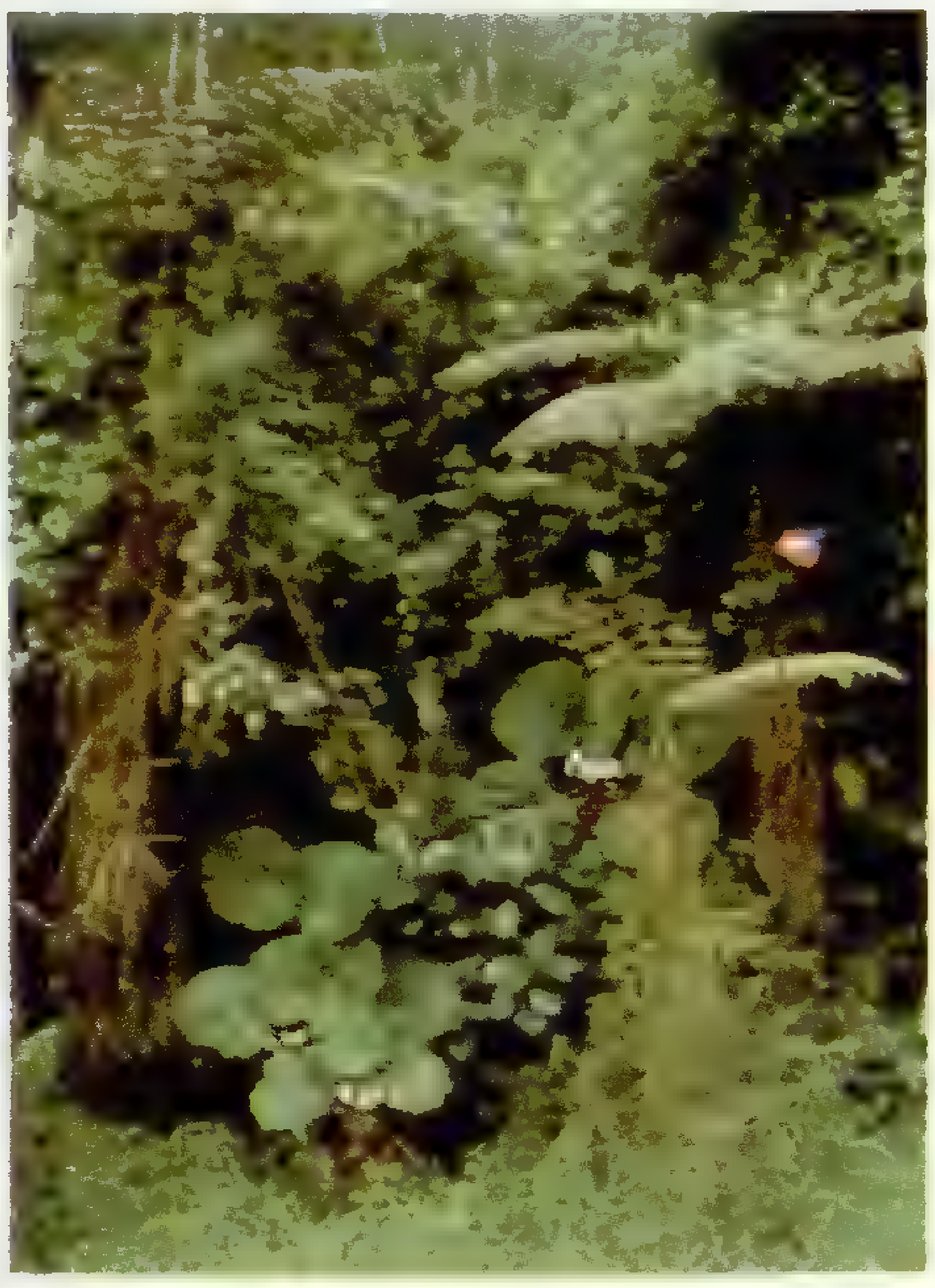


Fig. 5. Edge of the crater Lagoa Amélia with *Cyathea manniana* and the endemic *Begonia cratens.*

Fig. 6. The crater of Lagoa Amélia.

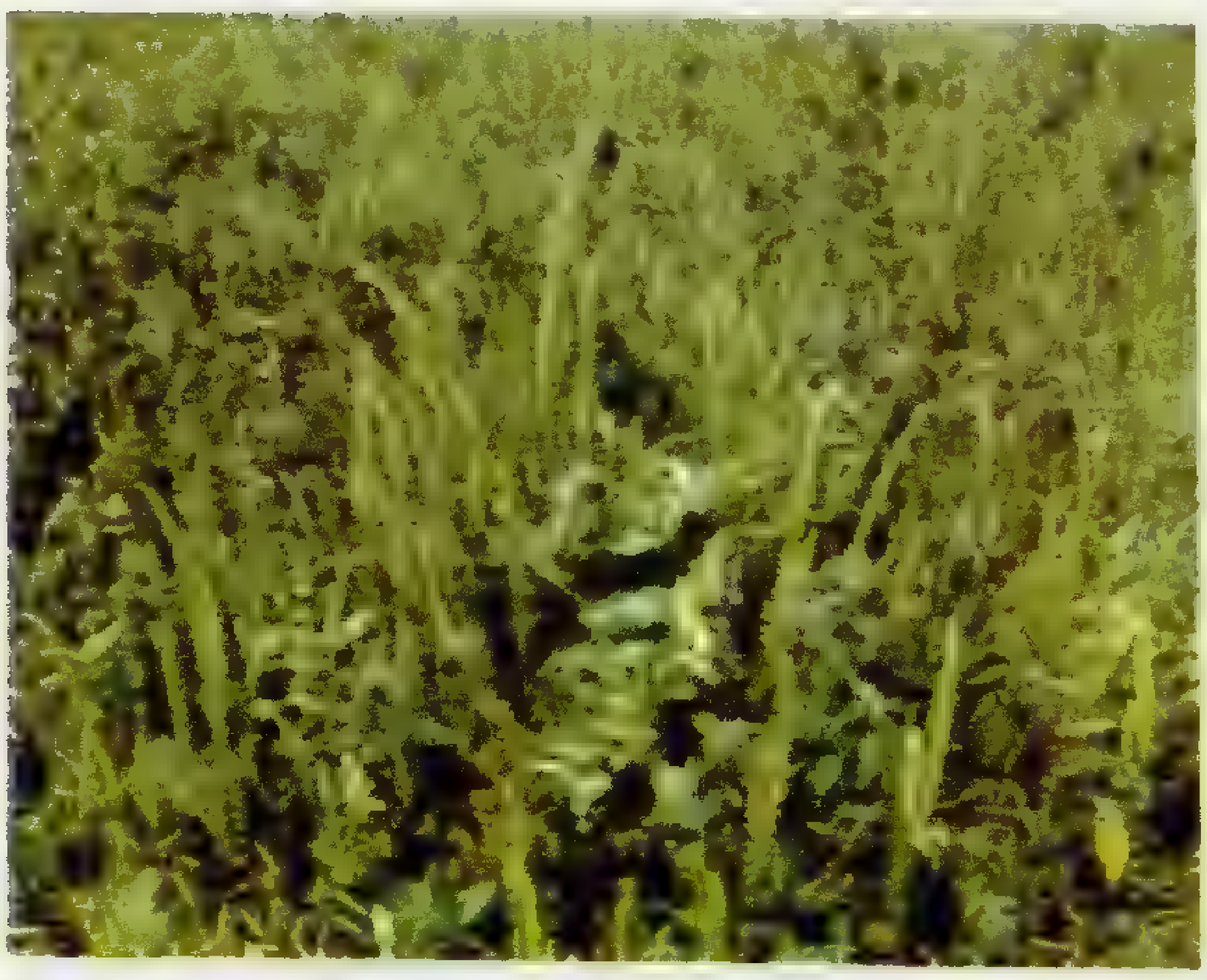


Fig. 7. *Nephrolepis pumicicola* at Lagoa Améia.

Fi.g. 8. Waterfall on the road to Bombaim.

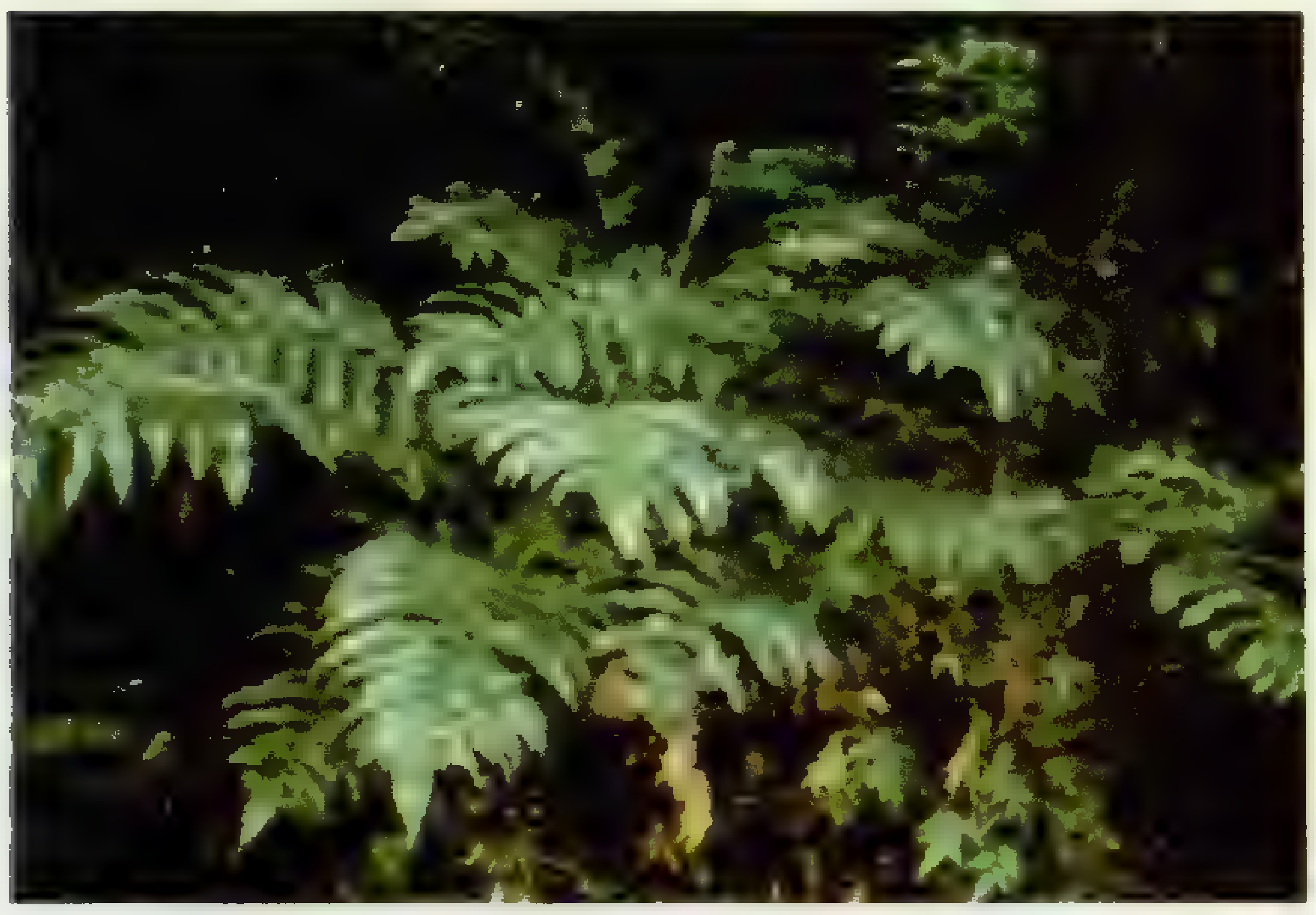


Fig. 9. *Diplazium proliferum.*

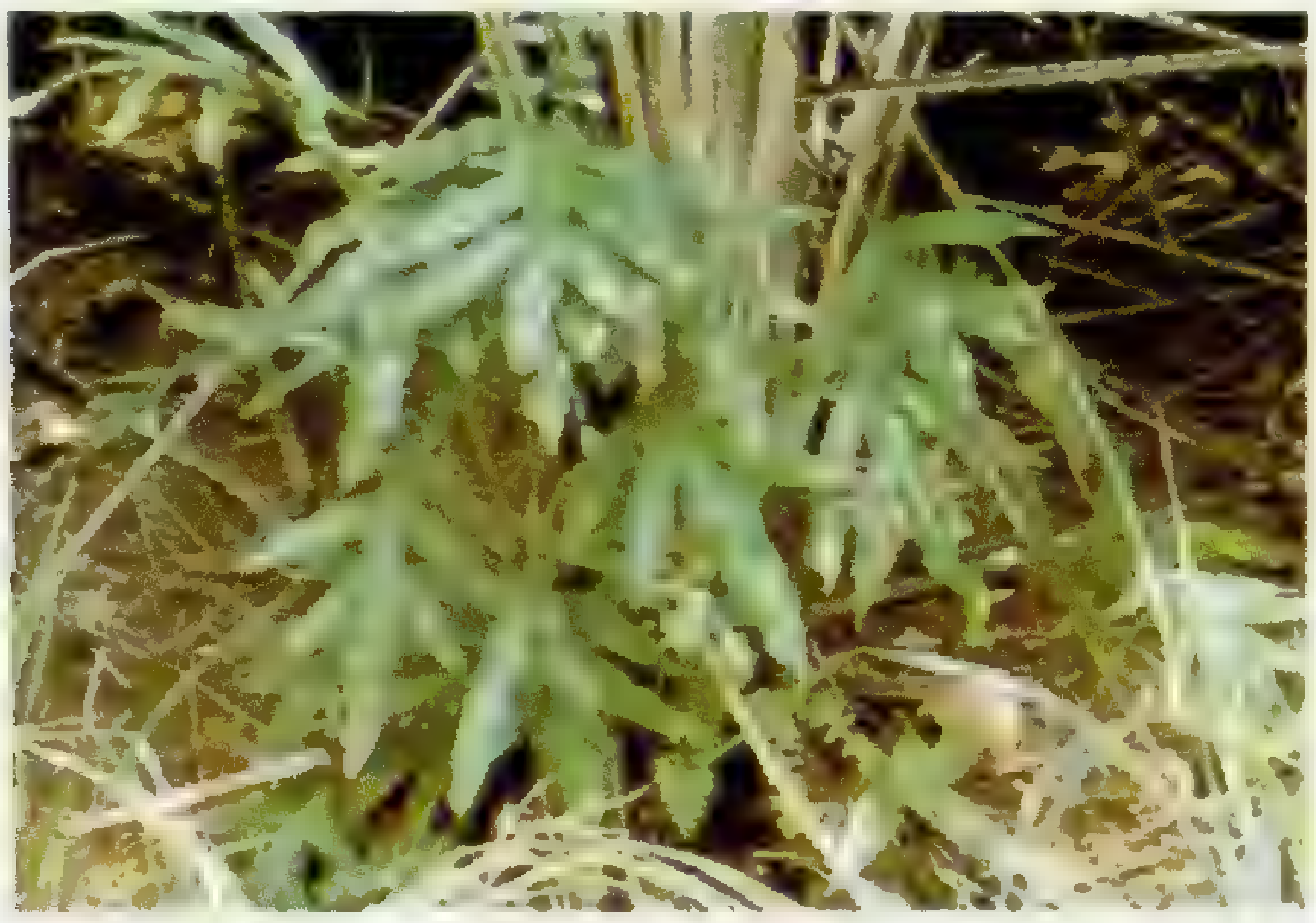


Fig. 10. *Phymatosorus scolopendria*, a common epiphyte.

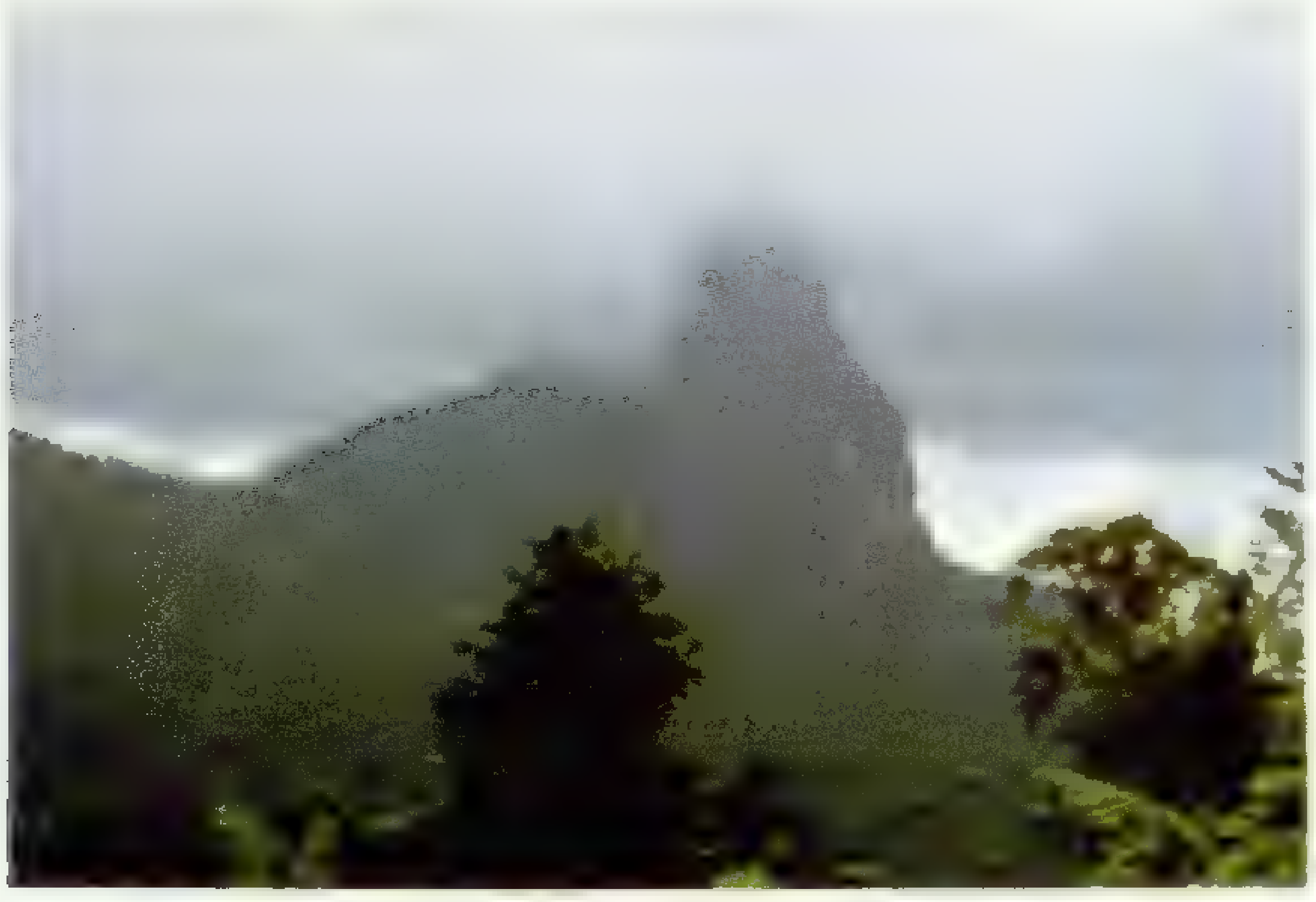


Fig. 11. Pico Maria Fernandes, seen from Morro Gentio.

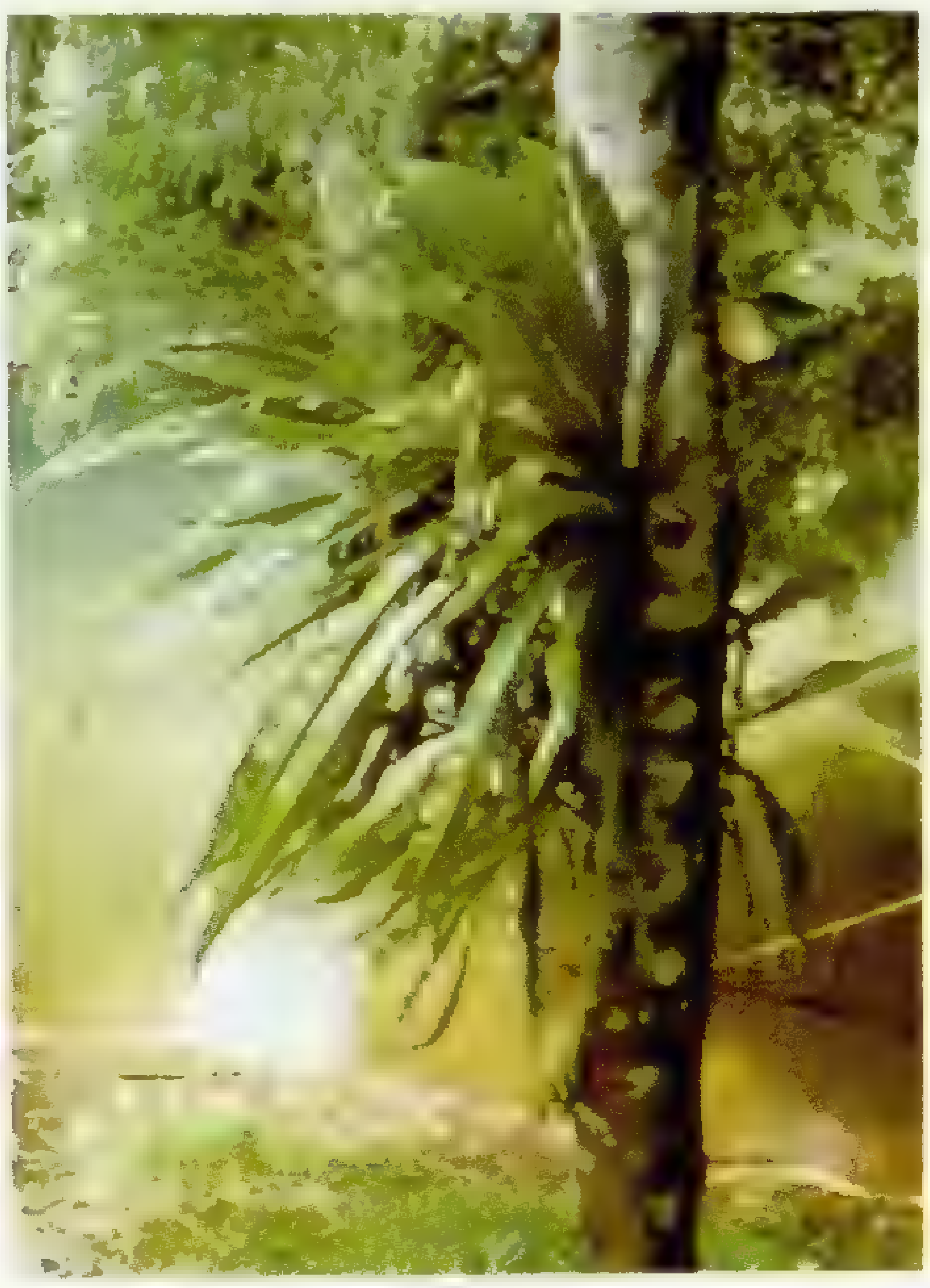


Fig. 12. *Asplenium africanum*, by the river Ió Grande.

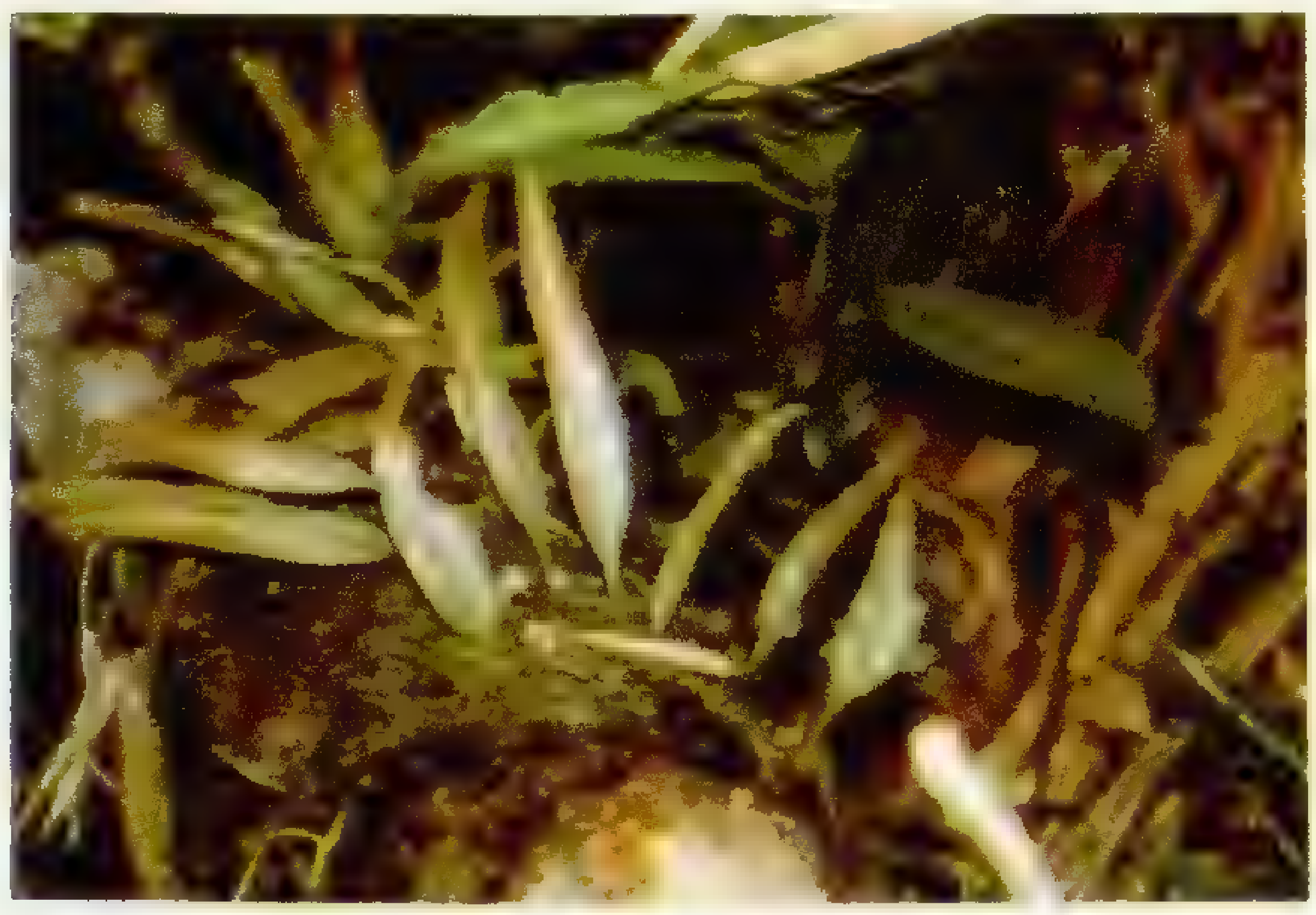


Fig. 13. *Pyrrosia lanceolata,* epiphyte on a fallen tree.

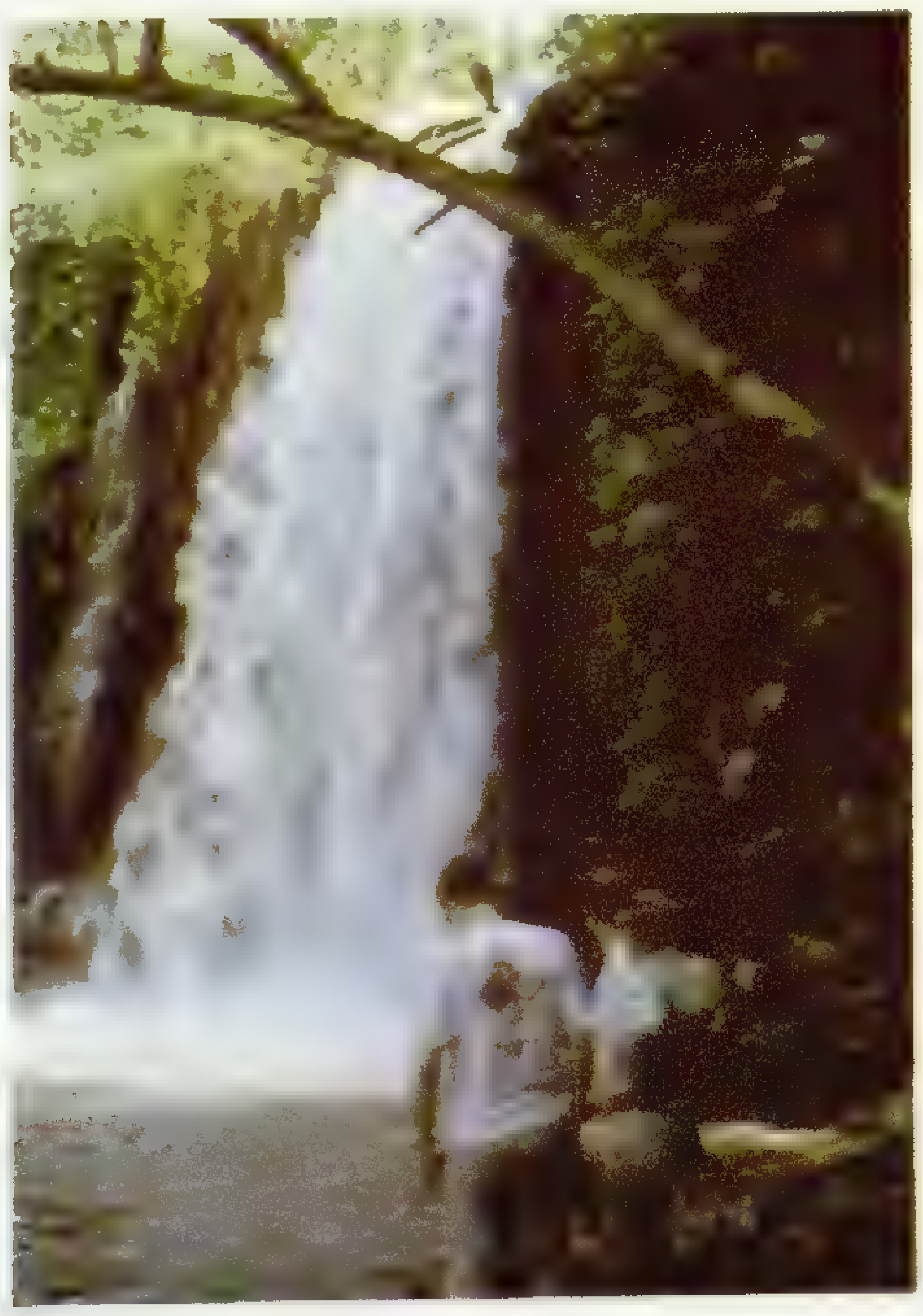


Fig. 14. Blublu, the waterfall.

Fig. 15. The path along the water-channel, with a tunnel on the right.

short distance away from the capital. After crossing cocoa plantations and being attacked by nasty tiny ants (an introduced pest), we reached this nice waterfall (Fig. 14). The offerings at its base seemed to indicate that it is a popular spot for magic practices.

We found that the surrounding vegetation was visibly drying out, and the habitat did not seem suitable for plants requiring a lot of humidity. There was no sight of *Selaginella*. Going round the waterfall to the other margin of the river, we managed to approach the rock walls behind the waterfall but these proved impossible to reach. Although apparently extinct in the area surrounding Blublu, it is possible that *S. monodii* still exists on these walls, the only place where it could be safe from human interference.

The second locality where *S. monodii* had been collected is of more difficult access but much more interesting. Going to the north of the island, and along the coast towards west, we crossed cocoa plantations and a stretch of secondary savannah in the driest part of the island, an area where pteridophytes are scarce. Apart from its scenic qualities, this road offers the view of *Platycerium stemana* growing on plantation shade-trees. After the town of Neves, turning left to Roça Ponta Figo towards the interior of the island, one reaches Generosa. From there one can drive a bit further along the Rio Contador, and then walk along the valley and enjoy spectacular views of steep slopes densely covered with forest.

The setting up of a hydroelectric plant in this area during the colonial period, with the construction of a water-channel running along the line of 600 m of altitude, has facilitated access to visitors. The narrow water-channel, originally covered with concrete slabs but now open in many places, provides an easy walking path. At some points it runs through low-ceiling tunnels with bat colonies (Fig. 15). To find the water-channel one needs spedfic directions or a local guide. We did not find the way at first, and had to take a strenuous short cut through a very steep taro plantation. Along the water-channel, pteridophytes are plentiful and diverse. Along a track of about 3km we managed to find several rare low-altitude ferns. Two locally rare palaeotropical species of *Adiantum, A. mettenii* and *A. philippense* occur in this area, along with the introduced American species *A. raddianum*. Several species of *Asplenium* can be seen, some of which have rarely been recorded, such as *A. emarginatum* and *A. lividum*. *Pellaea doniana*, which had not been recorded in the island since the last century was re-discovered in this locality. We found certain places of the rocky slopes along the water-channel densely covered with *Selaginella*. Several species of *Selaginella* that occur in S.Tomé are not distinguishable at naked eye so I had to collect many samples along the way and study them later. Most of them proved to be the elusive *S. monodii*. We could conclude that although apparently extinct in its type locality the species thrives in this area where it apparently faces no major threats.

SOME USEFUL INFORMATION FOR TRAVELLERS

Travelling to S.Tomé is easy but expensive. To get there, one can either fly from Lisbon or from Gabon. The island has all the necessary infrastructures to provide a pleasant stay, with a choice of several hotels and restaurants in the capital. It is a safe place and the people are very friendly. It is advisable to choose the dry season for visiting and arrange for accommodation in advance.

There are organised tours of the island, but I think that renting a vehicle is better, to make the most of the visit. However, insurance is not available and there is a risk of running over a child or crashing into one of many reckless drivers. Driving in S.Tomé is a dangerous activity. The visitors should take all precautions regarding malaria prevention, as this disease is particularly dangerous in S.Tome. Apart from this hazard, there are no major health dangers in the island, considering that it is situated in the African tropics. Likewise, walking in the forest is not dangerous... if one does not meet the endemic 'black snake' whose bite is fatal!

ACKNOWLEDGEMENTS

I thank the Portuguese FCT, PRAXIS XXI programme, that sponsored this trip, Ana Morgado for producing the maps, and especially Isabel and Carlos Cruz for their very generous hospitality and Angus Gascoigne (Environmental Information and Technical Services) for showing us so many interesting places. This account was written at The Natural History Museum, London, with a grant from EU-TMR programme LSF-BioResource.

HARDWICK HALL EMBROIDERIES

Brenda Smith, 184 Solihull Road, Shirley, Solihull, B90 3LG U.K.

Last summer I visited Hardwick Hall, a National Trust property in Derbyshire, which was the home of Elizabeth Shrewsbury(1507-1608), better known as Bess of Hardwick. Bess is well known as being a feisty Elizabethan character, who from quite modest beginnings, by marrying four times increasingly wealthy husbands, became a very powerful lady. As well as all this she must have been a quite remarkable needlewoman, for Hardwick Hall is now famous for its collection of tapestries and embroideries. The tapestries bought by Bess for Hardwick Hall are grand and magnificent, but the embroideries are on a much smaller scale and many of them worked by Bess, some with Mary Queen of Scots, during her imprisonment at nearby Chatsworth House.

These are the ones I found most interesting, particularly when I saw a screen containing 30 octagonal botanical embroideries, including three ferns - *Dryopteris filix-mas*, *Asplenium scolopendrium* and *Lunaria minor*. I hoped to find some mention of these in literature from the Gift Shop but although there was a book with some information about the set of pictures no mention or illustrations of the ferns.

My interest was re-awakened later in the year by a most interesting article in the American Fern Journal (Vol.88, No.3) by Richard A.Rauh entitled ‘A Millenium and a Half of Fern Illustrations’. Illustrations 2 and 3 reminded me of the embroideries I had seen and I wondered if these could have been taken from the same source, ie The Brunfels (1530) Herbarium Vivae Eicones (Ill.2) and Leonhart Fuchs De Historia Stirpium (Fuchs, 1542). These books according to Mr.Rauh marked the beginning of natural, scientific representation of plants.

However this proved not to be the case. When I contacted Hardwick Hall I was very kindly sent a copy of an article which had appeared in the National Trust Year Book 1975/76 entitled ‘An Elizabethan Herbarium: Embroideries by Bess of Hardwick after the Woodcuts of Mattioli’ by John Nevinson. In this he says there is no doubt that the woodblock illustrations used came from herbals by Pietro Andrea Mattioli, the botanist who worked for Emperor Rudolph II at Prague. Two editions seem to be relevant, one published in Venice in 1568 and the Lyons edition of 1572. There is no record that Bess actually owned a copy of either of these, but subjects of the embroideries are listed together with their titles as given in the two editions.

It is not certain for what purpose these were originally intended, but it is possible they were meant to be applied to velvet or silk curtains or hangings. However this task was obviously never completed as a passage in a ‘Handbook to Hardwick’ privately printed by the Duke of Devonshire (1790-1858) states that among rags and patches in the Green Bedroom he found thirty medallions, all bearing Lady Shrewsbury’s initials, the plants extremely well designed.

In 1935 just one single octagonal panel with the initials E.S. was hanging in a frame on the back stairs, together with other fragments of embroidery. Enquiries into these led to the discovery in a chest of drawers of thirty octagons, all fresh and stitched onto red baize and these were subsequently mounted by Evelyn Duchess of Devonshire on a specially constructed six-fold screen, and are the ones now on display there.

Each octagon measures about 14 x 14 inches (34 by 34 cms) and is finely worked in silk and wool on linen canvas, in cross and tent stitch, and each plant is surrounded by a latin inscription but there does not seem to have been any attempt to match the inscription to the picture. The standard of workmanship is high and although identification in some cases is not always too easy the three ferns seem to be well represented.

These preserved panels are interesting to both botanists and needleworkers and together with all the other splendid tapestries and embroideries make a visit to Hardwick Hall very worthwhile.

Many thanks are due to Gillian White, Curator and Collections Manager at Hardwick Hall, and Jennifer Vine, Lindley Library, R.H.S. for their help.

Hardwick Hall embroideries.
Provided by National Trust/Robert Thrift.

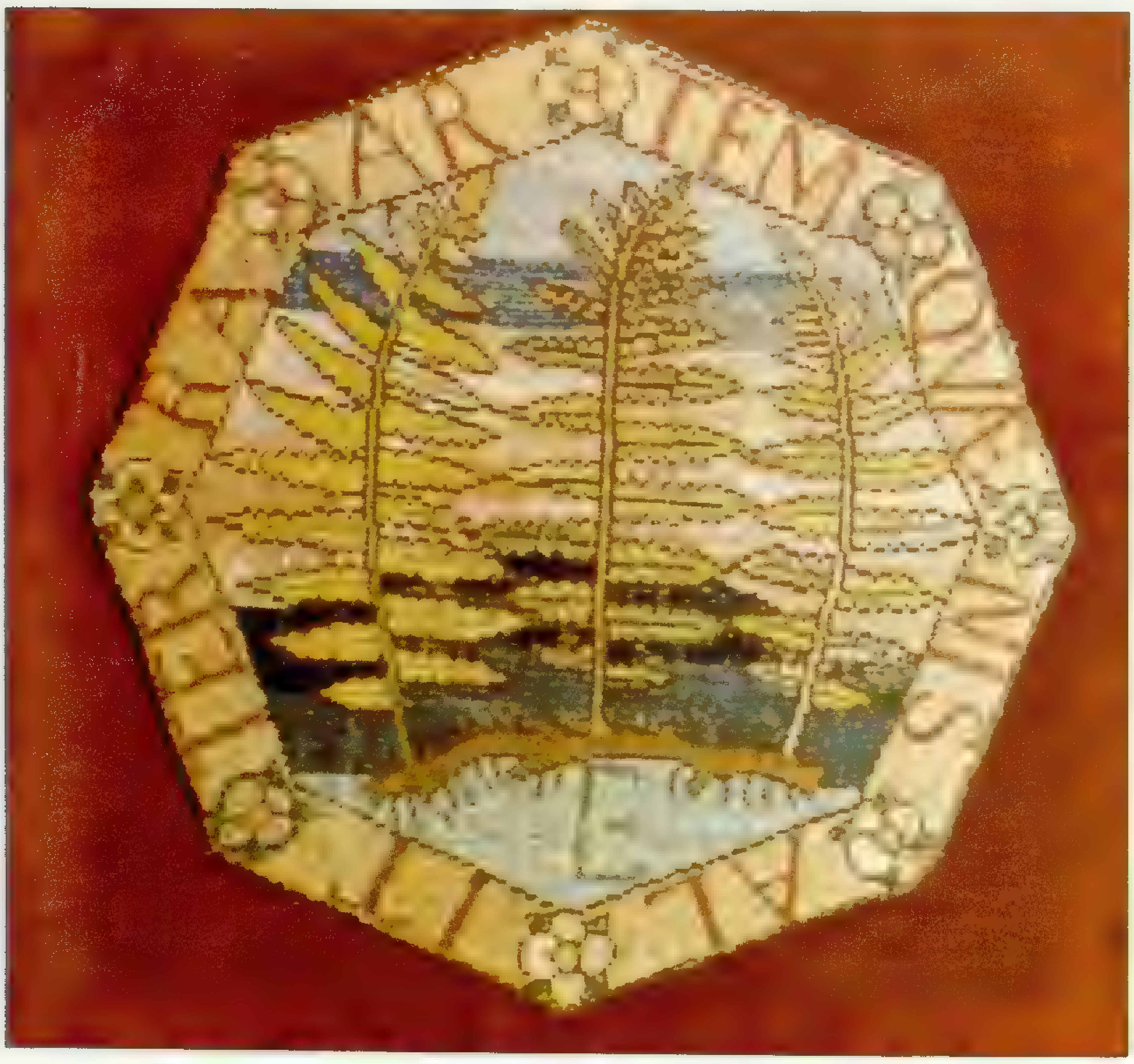


Fig. 1. *Dryopteris filix-mas*

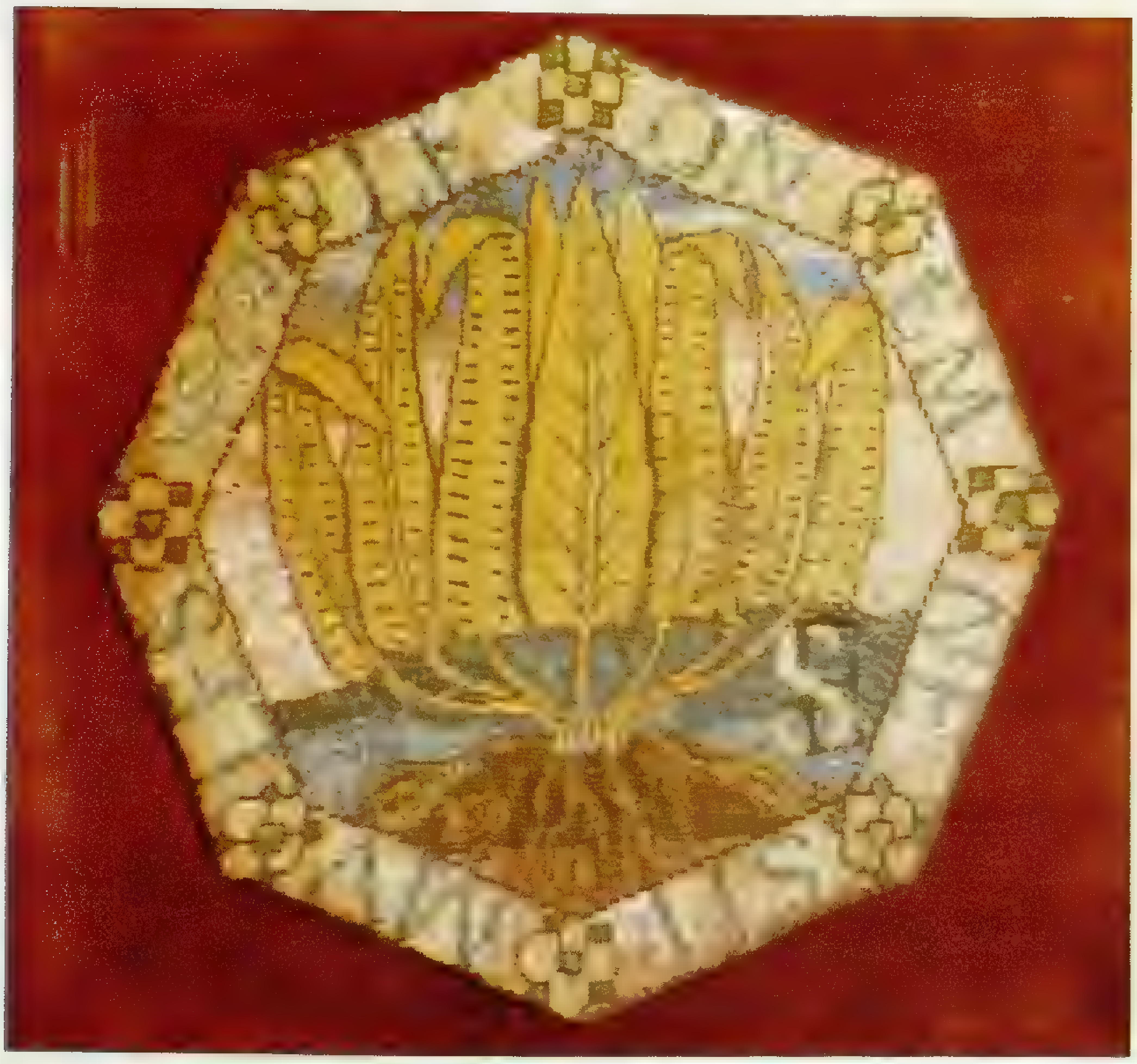


Fig. 2. *Phyllitis scolopendrium*

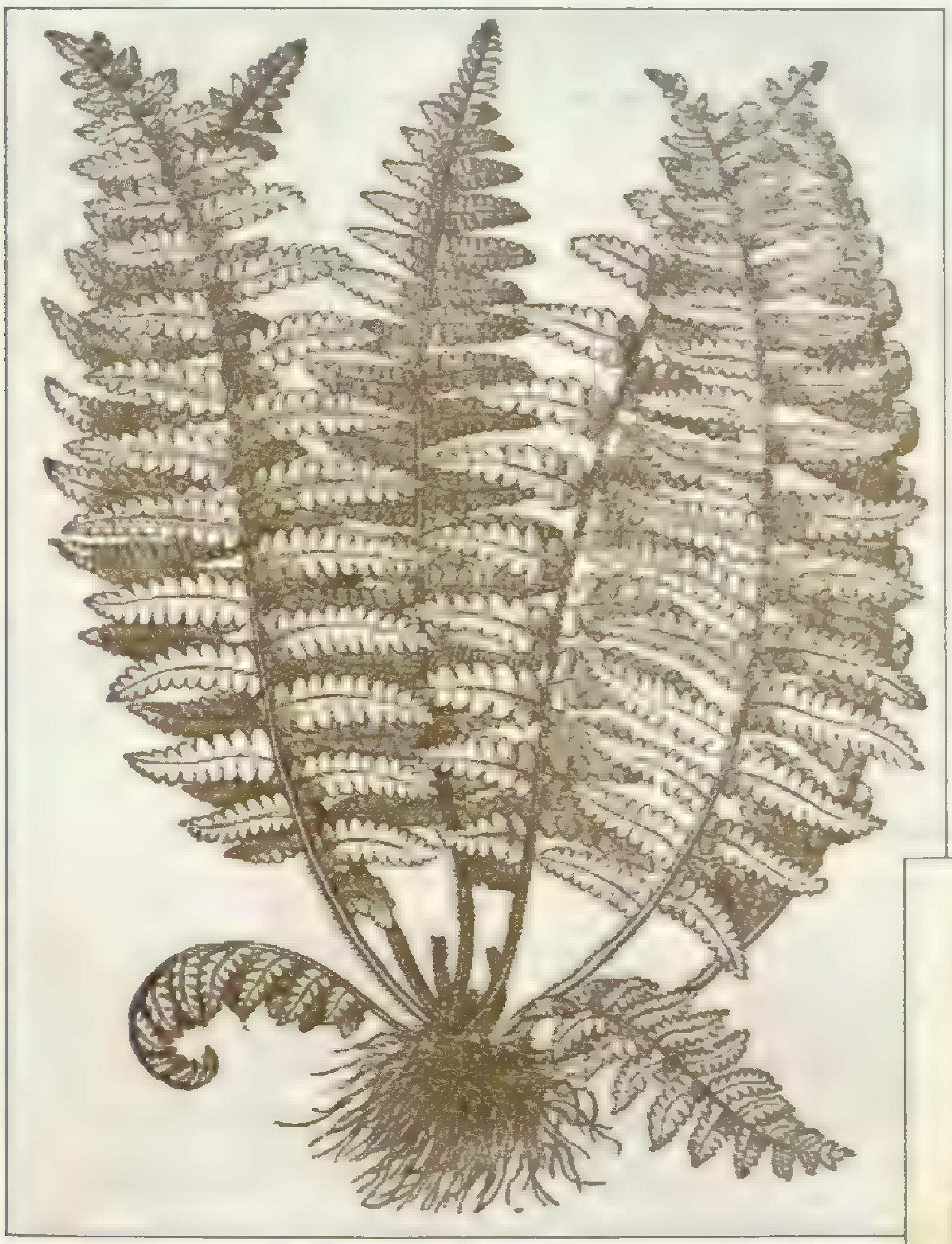
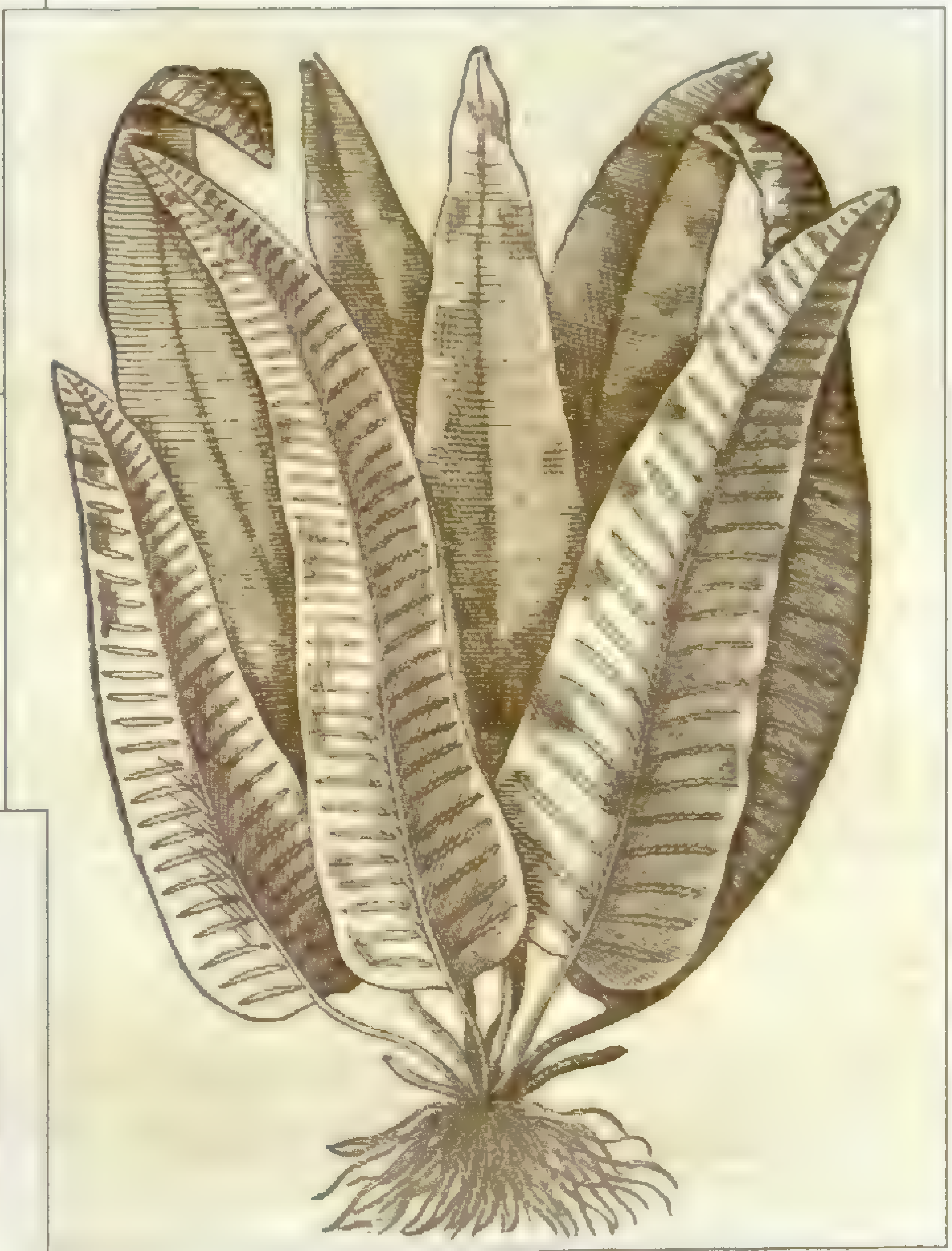


Fig. 3. Male fern (filix-mas)

Fig. 4. Hartstongue fern (Phillidis)



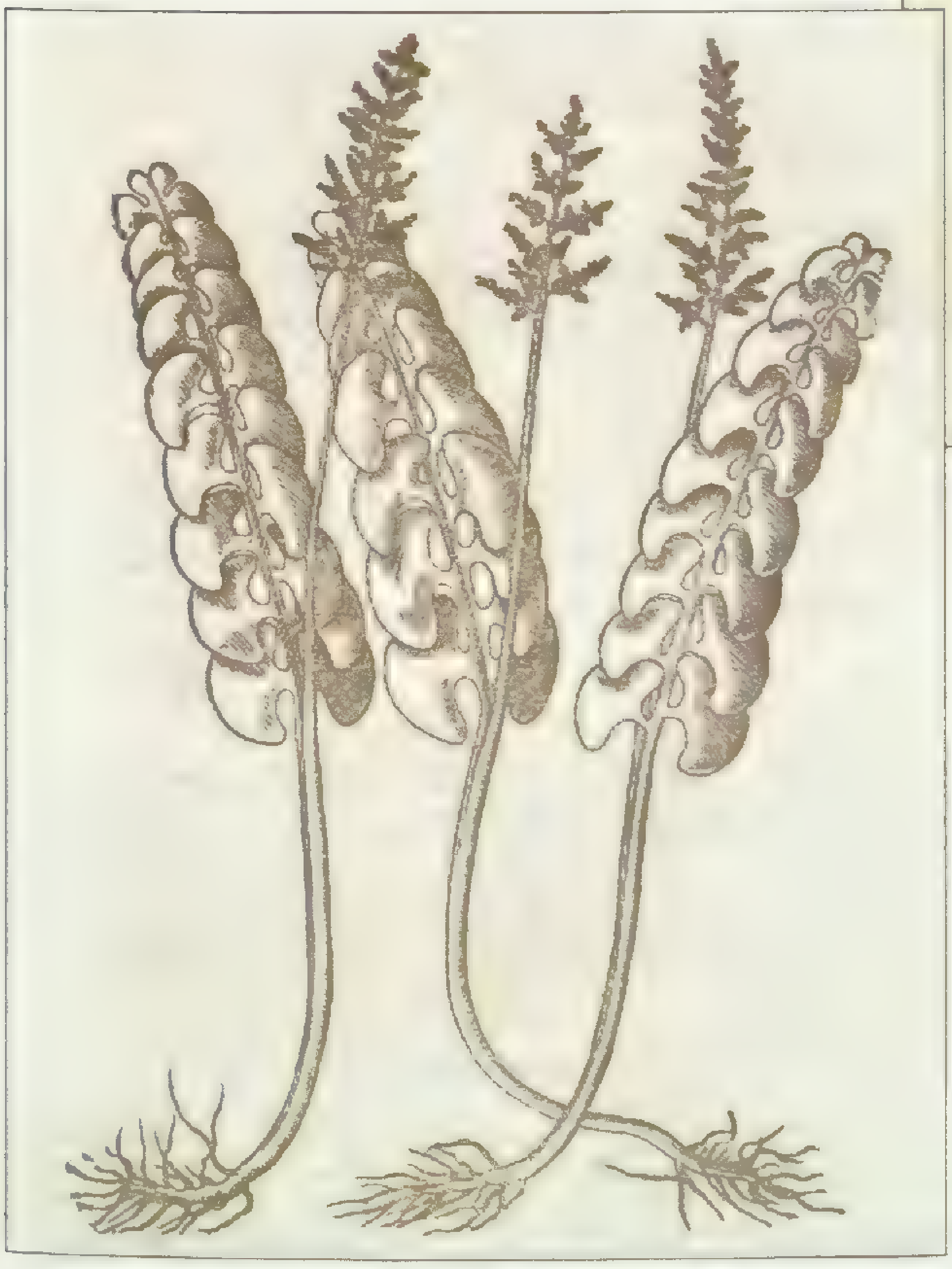


Fig. 5. Moonwort (Lunaria minor)

Figs. 3-5 from Mattioli - Venice 1568, provided by the Lindley Library.

THE CANADIAN FERN SOCIETY

Edith Austen Kamermans, Box 95, Southampton, Ontario, Canada NOH 2l0.

The Canadian Fern Society was organised in 1998 and already has one hundred members, mostly in southern Ontario. The Society has organised indoor meetings and field trips and publishes a newsletter *Filix* for members. The acting President is Tom Thomson, assisted by Brian Cook and others, and together they have given the Canadian Fern Society a remarkable flying start in just two years.

Recently the Society organised two public fern display gardens: A hardy fern collection has been placed at James Gardens which is one of three "Formal Garden" parks in the Toronto Parks System. This is a popular spot and should provide plenty of public exposure to ferns. The second non-hardy collection is in the Centennial Park Conservatory, also in Toronto. Here is an ideal location complete with waterfall and small stream. Altogether around 300 ferns from more than 80 different varieties are now on display and the Society hopes to add to this number in the future. In addition to the public display gardens some space has been obtained in a production greenhouse to grow ferns from spores.

Grey and Bruce Counties in Ontario were the sites chosen for our September 1999 fern weekend. Twenty-one enthusiasts gathered in the city of Owen Sound, and led by Nelson Maher, visited sites of great beauty to view our native ferns, including the rare Hart's Tongue (*Asplenium scolopendrium*) and the tiny Wall Rue (*Asplenium ruta-muraria*) on its accustomed limestone. The variety of habitats in this area included shaded woodlands, limestone crevices, swamps, rocky outcrops, talus slopes which all had their array of ferns including:
Asplenium rhizophyllum, A. trichomanes, A. trichomanes-ramosum,
Athyrium filix-femina,
Botrychium dissectum, B. multifidum, B. virginianum,
Dryopteris cristata, D. filix-mas, D. goldiana, D. intermedia,
Gymnocarpium robertianum,
Osmunda claytoniana,
Polystichum lonchitis
Woodwardia virginiana.

The strong conservation message from both the Society and Nelson Maher meant that only the leader took a few sporeing fronds for propagating purposes.

'Enjoy all these green things growing
But leave them safe in their native haunts.'

All the fern sites visited were in the wild, sometimes on private land with permission, or in the natural areas of parks. The one exception was the fern garden at the Owen Sound home of Mr and Mrs Maher. Nelson Maher's in-depth knowledge of the ferns in Gray and Bruce Counties made the two days exceedingly interesting for everyone. With some 50 different fern species to be found in the general area, Owen Sound may rightly be called the fern capital of Ontario.

Also in September 1999, Professor Alistair Wardlaw visited Canada. Alistair Wardlaw was a one time resident of Toronto although he now lives in Glasgow. He gave a talk and slide presentation on "Canadian Ferns in a Scottish Garden" to our meeting at Humber Nurseries.

Membership of the Canadian Fern Society is C$15.00/year. Interested readers should write to Mr Tom Thomson, The Canadian Fern Society, c/o Humber Nurseries Ltd., R.R.8, Brampton, Ontario, Canada L6T 3Y7.

HYMENOPHYLLUM TUNBRIGENSE IN CORNWALL

Rosaline J. Murphy, 'Shang-ri-la', Reskadinnick, Camborne, Cornwall TR14 OBH

Hymenophyllum tunbrigense (L.)Sm., the Tunbridge Filmy-fern, is the most frequent of the two filmy-ferns in Cornwall. Yet, apart from those sites where it is abundant, finding it is difficult. A climb to the top of Rough Tor (SX/18) on Bodmin Moor is rewarded by the sight of sheets of *H. tunbrigense* growing in a semi-cave against a rock surface streaming and oozing with water. A visit to the Cheesewring (SX27) on the same moor produces a different story. Here, the growth of the fern follows a flush site down the side of the hill and the fern has to be searched for amongst and at the base of the granite clitter that strews it.

In Kennall Vale, near Ponsanooth (SW73), almost the only present-day site in West Cornwall, the plant is abundant. This is the valley where, in his teens, F. Hamilton Davey worked in the Dynamite Mills that were operated by the power of the river, rushing over waterfalls and working the water-wheels before being channelled along leats back into the river further downstream. In this steep-sided, wooded valley, lush with other ferns, high in humidity, the Tunbridge Filmy-fern has been recorded since 1902 (Davey, 1902). It is most luxuriant on the north side, growing in places in dense masses.

H. tunbrigense grows in other granitic river valleys in Cornwall, as in Draynes Wood (SX26) by the Golitha Falls on the River Fowey. There are many such wooded, river-valley sites in the county that would seem to be suitable for the fern, yet it is absent. This applies to a particular stream valley, with its tributary of the River Camel set with many granite boulders, below the Devil's Jump (SX17). However, if one can face a long walk over Pendrift Downs from Blisland (SX17), one may come across a small, rather hidden, steep-sided valley where a stream rushes down into the de Lank river. Here, nearly every boulder has its curtain of filmy-fern and the boles of a number of the surrounding oaks are covered with its fronds.

One most amazing find was made almost in the middle of china-clay country. China-clay waste is not a good habitat for ferns, nevertheless it was felt right to search such an area, especially as there was an old record for Tunbridge Filmy-fern from the Gover Valley below the waste tips. It did not prove easy to find. The river was extraordinarily deep in places, overhung by fallen trees and strewn with many huge granite boulders, yet the fern was surviving here, growing both over the surface of the wet granite and on the twisted roots of trees that dipped into the water. It is the only site for *H. tunbrigense* so far refound in this particular grid square, SW95 (Fig.1).

Richards and Evans (1972) reported that *H. tunbrigense* grows on various kinds of rock, usually acidic, such as sandstone, granite and quartzite, the major consideration being, not the type of rock, but that it is 'fairly hard' and can 'remain moist for long periods'. In Cornwall the rock is usually granite, but the plant can also be found on other rock surfaces. In Peter's Wood (SX19), inland from Boscastle, the wet rocks are of Carboniferous shales, while in the West Looe valley, both in Kilminorth Wood and near Sowden's Bridge (SX25), they are of Devonian slates and grits. Davey (1909) notes the presence of the fern in Hustyn Wood near Burlawn to the south of Wadebridge (SW96 and SX06). An extensive wood, it seemed wisest to follow the course of the stream and its tributaries in the hope of refinding the plant. It was still there, though in relatively small quantity: two large patches on wet, moss-covered boulders of Staddon Grit, one small amount on another boulder and a few plants on a root stump that overhung the water.

There are other instances like this where *H.tunbrigense* may still be found at old localities, but in rather reduced quantity. L. J. Margetts (Margetts & David, 1981) was convinced that the fern was still present on a granite tor (Carn Brea, SW64) near his home. John Ralfs had seen it here in 1879 and noted that it had been recorded as 'still there in 1884' by S. Cara (Ralfs, 1878-1879). Walking the tor from end to end, Len Margetts searched among and between the granites, using a pointed stick and eventually pulled up, just one frond! He made his find in 1962, but subsequently, there have been a few years of very low rainfall with fires sweeping over the Carn and these have probably not been conducive to the fern's survival. The line of the flush site along which the fern grew has been successfully identified, but as yet no trace of the fern has been found.

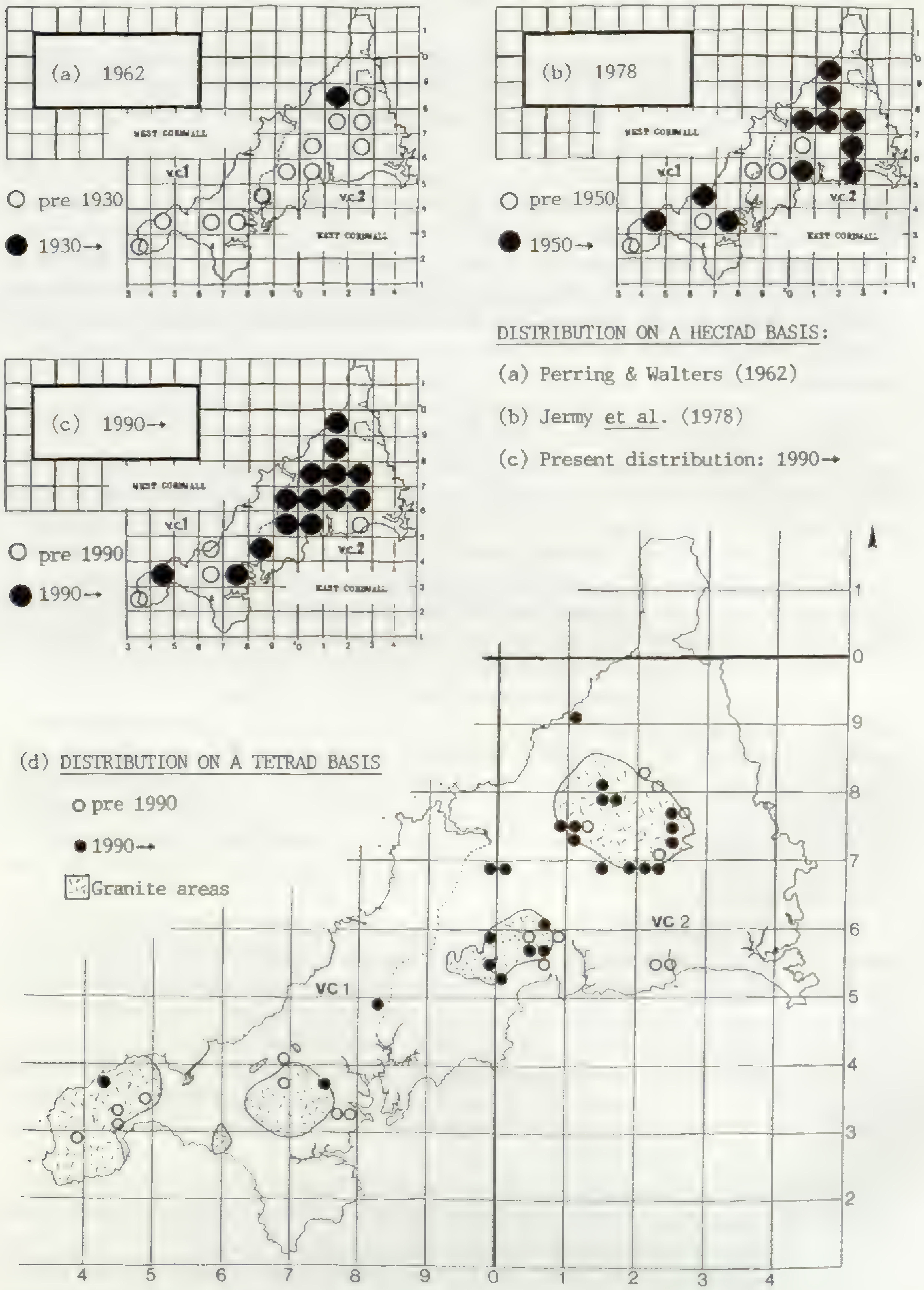

(a) 1962
WEST CORNWALL
vc1
vc2
EAST CORNWALL
○ pre 1930
● 1930→
(b) 1978
○ pre 1950
● 1950→
DISTRIBUTION ON A HECTAD BASIS:
(a) Perring & Walters (1962)
(b) Jermy et al. (1978)
(c) Present distribution: 1990→
(c) 1990→
○ pre 1990
● 1990→
(d) DISTRIBUTION ON A TETRAD BASIS
o pre 1990
• 1990→
Granite areas
VC 1
VC 2
4
5
6
7
8
9
0
1
2
3
4
1
0
9
8
7
6
5
4
3
2

Fig. 1. Distribution of *Hymenophyllum tunbrigense* in Cornwall

A new member of the local fern group has suceeded in refinding *H. tunbrigense* in the river valley that borders Bishop's Wood (SW84), an ancient woodland with a circular, earth-bank enclosed fort that supports *Dryopteris aemula*. The wood lies to the north of Truro and Tunbridge Filmy-fern had last been recorded here in 1867! (Paull, 1867). All that seemed to remain was a small colony covering an area of 15 x 30cm on a damp rock, close to ground level, near a disused quarry of Devonian Grit, not immediately by the river, but by an old, water-filled leat.

John Ayrton Paris was the first to record *H. tunbrigense* for Cornwall. He lists it in his *'Guide to Mount's Bay and the Lands End* (1824) where he notes it as being present on Castle-an-Dinas (SW43) in West Penwith. The early records for *H. tunbrigense* in the far west of Cornwall have proved to be quite a problem, especially in relation to the listing of sites. W. Curnow reported it for Trengwainton Garn in 1844, J.B. Montgomery for Carn Galver in 1854 and the famous John Ralfs for Carn Galver and near Madron Poorhouse in 1879, all of these localities being in SW43. It would seem unlikely that a mistake in identification was made by such people, especially as they were also recording *H. wilsonii* (as *H. peltatum* Desv.), and their records are given support by the presence of specimens from Carn Galver (SW43), dated 1880 and 1888, collected by H. and J. Groves, now in The Natural History Museum. The identification of this material as *H. tunbrigense* has been kindly confirmed by Alison Paul.

However, this still leaves the problem of the open circle for SW32 (Perring & Walters, 1962). Davey (1909) listed the record-made by John Ralfs for Carn Brea under his (Davey's) botanical area 8 which is West Penwith. There is certainly a Carn Brea in West Penwith in SW32, but there is also a Carn Brea in SW64 This lies in Davey's botanical area 5 and is the Carn Brea that Len Margetts so painstakingly searched (Fig.2). Duplication of local names is another problem facing those trying to locate old sites!

John Ralfs' Carn Brea was Len Margetts Carn Brea. In his m/s *Flora of West Cornwall Vol. 3* (1879), Ralfs writes as follows concerning his records for *H. tunbrigense*:

"Carn Galver! Road near Madron Poorhouse sparingly! Carn Brea near Redruth! Still there in 1884, S. Cara"

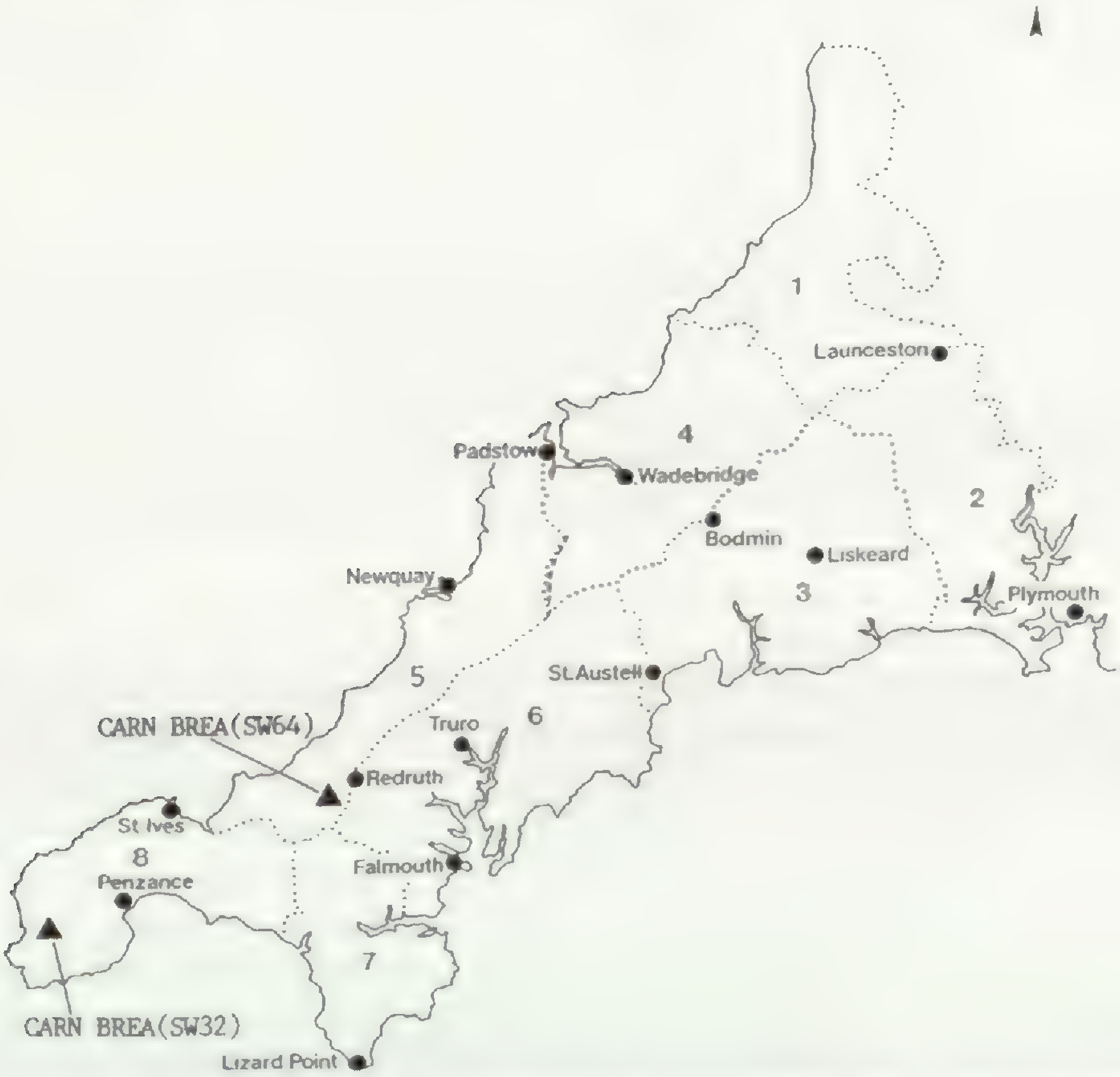


Fig. 2. The botanical areas of Cornwall as defined by F. Hamilton Davey. Map adapted from his *Flora of Cornwall* (1909) to show the positions of Carn Brea in West Penwith and Carn Brea near Redruth.

Presumably the open circle for SW32 in Perring & Walters (1962) is based on the record for Carn Brea as given in Davey (1909). This cannot be taken as certain, of course, and further investigation is needed before the record for SW32 can be safely deleted.

Since the publication of the new *Flora of Cornwall* (French, Murphy & Atkinson, 1999), when doubts were expressed concerning records for *H. tunbrigense* in the far west of the county there has been an opportunity to read the account of *Hymenophyllum* by Richards and Evans (1972). The map given by these two authors marks SW43 with a closed circle, a situation re-iterated by Jermy *et al.* (1978), suggesting that a record existed at the Biological Records Centre, Monks Wood. In 1969 there was a BPS excursion to Cornwall, but this was based on Launceston in the east of the county. *H. tunbrigense* was recorded, but only on Tors on Bodmin Moor. No indication was given that any member of the group searched the West Penwith area. However, recent information from C.D. Preston (pers. comm.) revealed that a record for Carn Galver (SW43) had been made by Derek Ratcliffe in 1968. This data had been sent into the records office at Monks Wood and had been incorporated into the distribution map for *Hymenophyllum tunbrigense*, a map that then appeared both in Richards and Evans (1972) and in Jermy et al. (1978).

There is no doubt that *H. tunbrigense* continues to survive at many sites in East Cornwall, both on the Tors and in wooded, rock-strewn river valleys. However, there are only three localities known at present in West Cornwall, Kennall Vale (SW73), Bishop's Wood north of Truro (SW84) and now Carn Galver (SW43). Recorded at this last site for over a hundred years, until very recently the finds made by Jean A. Paton in 1963 and Derek Ratcliffe in 1968 were the last known. Then on 5 March 2000 it was refound by Trevor Edwards, a good find for the Millenium!

Unlike *H. wilsonii* which grows over the upper surfaces of the granite blocks on this West Penwith Tor, *H. tunbrigense* grows deep between the rocks in the greatest available shelter and is therefore not easily seen. It is hoped to continue the search for *H. tunbrigense* in West Penwith by visiting other old sites in SW43, studying the Carn Galver site in more detail, and surveying Carn Brea in SW32 just in case!

ACKNOWLEDGEMENTS

Grateful thanks are extended to Alison Paul for the confirmation of specimens of *H. tunbrigense* in BM, to Barry Thomas for information relating to the BPS meeting in Cornwall in 1969, and to Nigel Brown, Clive Jermy, Jean Paton and Chris Preston for help in tracing old records for Carn Galver in West Penwith.

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BOOK REVIEWS

Rickard M. *The Plant Finder's Guide to Garden Ferns*. David & Charles, Newton Abbott, Devon, UK. (2000) 192pp. ISBN 0 7153 0806 8. Price £19.99 (also published in North America in 2000 by Timber Press, Portland Oregon. ISBN 0-88192-476-8. Price US$34.95, C$49.95).

This long-awaited book luckily arrived just as I was going to press, so I eagerly opened the package and started to flick through the pages. This bookshop technique of scanning the pages, looking at the pictures, names, section headings, running headers and perhaps reading the odd sentence or two here and there stopped dead at the first double page spread of *Polystichum setiferum* fronds - am I the only one who flicks through the pages from back to front? Had I got 'Plumoso-divisilobum' in my own garden? If not, why not? But I dragged myself away and continued until I reached the *Asplenium scolopendrium* spread where I stalled again. Frankly, on this basis alone I would have bought the book, if I had been in a bookshop.

But I was not in a bookshop, so I looked more closely and this time started at the beginning. The book is nicely laid out, easy to read and the photographs are generally quite lovely even though a very few are a little too dark or too green. The author's style is pleasant and his personal views are a refreshing change to the drier texts where the word 'I' is so scrupulously avoided as though it is the plague.

The introductory chapter gives a personal, but illuminating, insight into the history of fern growing, fern hunting, ferns and the decorative arts, and fern books which shows so well how you can get carried away (or even obsessed) by ferns in so many different ways. The following *Choosing and Using Ferns* chapter will be welcomed by gardeners wondering how to start with ferns and the accompanying photographs add to the encouragement by showing just what be achieved. *Special Cases* allowed Martin to both indulge himself and to enthuse the reader on growing tree ferns out of their normal climatic ranges. Those who know Martin's enthusiasm for these most appealing plants will not be surprised to find that desert ferns and filmy ferns are treated like rather poor relations in this chapter.

Well over half the book is quite rightly taken up by *An A-Z of Ferns* where it really throws a wealth of information at you both on species and an enormous number of beautiful (and some not so beautiful) varieties. Each description includes notes on size, length of life of the fronds, site preference, degree of hardiness (linked to European and USA plant hardiness maps) and key distinguishing features. If I have any real complaint it is that too many interesting sounding varieties are not illustrated. But, of course, all such books are a compromise between information and cost and the double page spreads are both such a delight to look at and a source of information that they are guaranteed to enthuse the reader to grow more - and more and more if you are not careful.

If you have a collection, or if you are just starting, the next chapter on *Propagation* shows how to increase what you already have, or how to take advantage of other peoples collections. This will be especially useful to those who do not live, like me, in the wild wet west where fern sporelings grow like weeds. "Fortunately ferns suffer from few pests and diseases" is the introductory sentence on *Pests and Diseases* which is clearly reflected in the shortness of this chapter.

The book is completed by some informative appendices on *Glossary of Terms* (Oops! A few silly mistakes here), and lists of *National Collections of Ferns* which shows you where to go to become envious, *Fern Societies* (sorry Canada!), *Where to see Hardy and Half Hardy Ferns* (more places to see wonderful collections and display more envy), *Where to buy Ferns* (displaying true restraint by the author). And *Further Reading* which misses a few I would have included such as Camus, Jermy and Thomas *A world of Ferns*, Ide, Jermy and Paul *Fern Horticulture: past, present and future perspectives*, Page's 2nd edition and a number of the recent regional fern floras of North America.

All my criticisms are minor and indeed who has ever written a perfect book - not I! In the *Preface* Martin Rickard hopes that the book will help the reader to recognise and grow the old favourites, new varieties and tree ferns while at the same time encouraging the wider use of the rarer 'living antiques' surviving from the Victorian heyday of fern growing. I fail to see how this book can do otherwise. It is one to have and to use, so buy one. However, on reflection, if you want to have a pristine one in your collection of fern books in years to come perhaps you should buy two.

B.A. Thomas

Altman, R. *Indoor Ferns*. Rebo Productions, The Netherlands. (1998) 144pp. ISBN 1 901094 510. Price about £10.00.

This book complements Martin Rickards because it deals with indoor tropical and sub-tropical ferns rather than hardy and half hardy outdoor ones. Again, it is written by someone with great hands-on experience that you feel has enough knowledge for you to trust. There are, again, chapters dealing with the general issues of collecting, the reproductive cycle, care and growing although the emphasis is different because indoor ferns are grown in containers. Pot size, humidity, light, temperature, watering and fertilising, and protection from insects all need care and his book explains quite clearly what you need to know. It also briefly shows how the 12 million baby *Nephrolepis* plants are grown each year in Dutch nurseries by tissue culture.

The fern family from A to Z chapter is again over half the book and contains much useful information on the best conditions for fern growing. It naturally concentrates on those species and varieties that are on the market in the Netherlands and those which will probably be in the future. This list is unsurprisingly dominated by *Adiantum*, *Asplenium*, *Nephrolepis*, *Pellaea* and *Pteris* but there are some lovely varieties here that I am now seriously thinking about growing myself. Tree ferns and so-called baby tree ferns (*Blechum brasiliense* and *B. tabulare*) are dealt with separately, but this time the emphasis is on keeping them in pots which can be outside in summer and brought into the greenhouse in winter. If you want to grow ferns indoors this is book is for you.

B.A. Thomas

ASPLENIUM CONFLUENS IN STAFFORDSHIRE

Mrs Barbara Porter, 1 Hazel Close, Marple, Stockport SK6 7OT

In the middle of Leek, Staffordshire, up a narrow side street a few yards from the main road, there is a derelict workshop. On the right-hand side of the door, there is a brick wall, constantly wet from a dripping pipe or gutter on the roof. The whole wall is festooned with *Asplenium scolopendrium* and *Asplenium trichomanes* ssp. *quadrivalens* growing in the mortar. On the bottom buttress of the wall there is a different plant flanked by the two species.

It was found on Saturday, 5th February this year by Dr Steve O'Donnell, a Staffordshire botanist and BSBI member (looking for a bookshop) and was identified as *Asplenium confluens* (T.Moore ex. Lowe) Alston: separately identified by John Hawksworth (BSBI recorder) and Myself and confirmed by Alison Paul. The three fronds collected are now in the Natural History Museum Herbarium.

The plant has about six fronds left, spreading almost horizontally, very much like a larger, coarser *A. trichomanes* and not particularly like *A. scolopendrium* at all except that the linear sori stretch from end to end of pinnae. The spores were very difficult to study as they must have been last year's and hence very decrepit.

This hybrid (as C. Page says in the 1998 second edition of his *The Ferns of Britain and Ireland*) cannot be a very robust plant as it appears so rarely, even though the parents often grow near each other. There were three sightings in the 19th century at: Levens Park, Cumbria (v.c. 69) by Stabler; Whitby, North Yorkshire (v.c. 62) by W. Wilson in about 1870; and in Killarney, County Kerry (v.c. h2) by F.N. Fraser in 1875. The only 20th century sighting was in County Kerry by Rush in 1983. All had the same form as the new plant in Leek.

The problem now is what to do about it. The premises are for sale and will either be bulldozed and cleared or, if restored and rebuilt, the leak will be stopped and the wall cleared. There is a possibility that the plant could be moved to a suitable habitat but that has its problems. On the other hand, it is not likely to be long-lived and it is of course sterile, so is it worth the bother?

A TABLE OF FERNS

Jennifer M. Ide, 42 Crown Woods Way, Eltham, London SE9 2NN

PRESENTED IN REMEMBRANCE OF FALCONER LARKWORTHY
A LOVER OF NEW ZEALAND 1945

Falconer Larkworthy was born in Weymouth, Dorset, in March 1833, the son of a surgeon. At sixteen years of age he started work with a London firm of East Indian merchants, but after three years left to join the Oriental Bank Corporation. He must have shown promise from the start, for in the year that he joined he was sent as sub-accountant to help open a new branch of the Bank in Mauritius. After about two years he went to Australia where, after learning to assay, cleanse and melt gold dust into ingots in their Melbourne branch, he was sent to represent the bank in the north-west gold fields of Victoria. The gold fields were dangerous places, especially for a banker, but although he was only twenty-two years old he was not deterred and he made a great success of his assignment. Five years later, at the relatively young age of 27 years, he was sent as caretaker manager of the Oriental's branch in Auckland while the Bank assessed whether or not to remain in New Zealand. Rightly or wrongly it took the decision to withdraw. Because of his expertise, Larkworthy was persuaded to leave the Oriental Bank Corporation and join the newly founded, first, exclusively New Zealand bank, the Bank of New Zealand. The enticement was the promise that within six months he would become the first General Manager of the Bank's offices in London, but before he could leave for England, gold was discovered in the Otago Province of South Island. As the only member of the Bank with goldfield experience, Larkworthy accepted the challenge to compete for the banking business in the newly discovered goldfields. He finally left New Zealand in 1862 to take up his promised duties as General Manager of the Bank of New Zealand in London, in which position he remained until 1888.

Sometime in the 1850s, most probably during the latter part of the decade, Anton Seuffert, originally from Vienna, brought his young family from England to the relatively new town of Auckland. He set up his workshop in the centre of the town and rapidly established a reputation as a master cabinet-maker of considerable talent. Perhaps it was during his brief stay in Auckland that Falconer Larkworthy acquired pieces made by Anton Seuffert, possibly even commissioning them; or perhaps he saw and acquired them at exhibitions. How, when and wherever he obtained them, Larkworthy owned at least three pieces and exhibited them at the Colonial and Indian Exhibition in London in 1886. One of the pieces is described in the catalogue as an oval table inlaid with New Zealand ferns, and is presumed to be the subject of this piece.

Falconer Larkworthy died in London in 1928, and in 1945 his two daughters, on moving to a smaller home, were compelled to dispose of a number of pieces of furniture. In her letter to the Director, Sir E.J. Salisbury, proposing the donation of the table to the Royal Botanic Gardens, Kew, Miss E. Rose Larkworthy writes,

'We have a table, a beautiful specimen of inlaid New Zealand woods. The inlaying represents native ferns in great variety. It was exhibited at the Colonial and Indian Exhibition in 1886. (I think.)

... we should like, if you approve, to give the table ... in remembrance of our father, Falconer Larkworthy, who loved New Zealand & in the early days of the colony had a great deal to do with acclimatisation.

'To our regret the table is too large to take to our new home. It is oval.'

(Dated 26.8.1945)

The table duly arrived at the Gardens and the Director wrote to Miss Larkworthy,

'Dear Madam,

The table was delivered here safely on Thursday last, and I write to express my best thanks for this most interesting and beautiful gift to the Royal Botanic Gardens. The workmanship is superb, and I should be very interested to have any information as to the maker and the circumstances in which the table was made.

The representation is so accurate that it should be possible to name many, if not all of the plants portrayed, and I hope we may be able to make a chart showing the names, and also indicating the various woods used. If you have any particulars of the timbers employed I should be very glad to know.' (Dated 10.9.45)

Rose Larkworthy was unable to give any further information but promised to let the Director know if should she come across any references when going through her father's letter boxes. As there is no further correspondence from her, we can only assume that she found none.

The table

The table is 184 cm long and 135 cm at its widest. At least twenty-nine ferns are represented in the inlay work, which is entirely of New Zealand woods.

Central motif

In the centre of the table is a large oval motif [1] with a triplet of fronds set against an inlaid background of a diamond chequer-board pattern in rewarewa (*Knightia excelsa* R. Brown) veneer (Figures 2(1) and 3(1))

The ferns are:

1a. a mid-lamina pinna of *Pteris macilenta* A. Rich. (sweet fern)
1b. a fertile pinna of *Blechnum discolor* (Forst. F.) Keys (crown fern, piupiu)
1c. a pinna of *Histiopteris incisa* (Thun.) J. Smith (water fern, mata)

This same group appears on several desks made by Anton Seuffert and also on the Baden-Powell desk made by his son, William, and described previously (Ide, 1999).

Inner ring of motifs

Around the central motif are four round motifs, alternating with four curved trapezoidal ones. The ferns of the former are inlaid on a background of mottled kauri (*Agathis australis* (D. Don) Lindley), whilst a diamond chequer-board pattern of rewarewa again provides the background for the ferns of the trapezoidal motifs.

The ferns seen in these motifs are:

2a. an upper portion of a fertile frond of *Pteridium esculentum* (Forst. f.) Cockayne (bracken, rahurahu)
2b. a frond of *Anarthropteris lanceolata* (Hook. f.) Pichi Serm. (lance fern)
3. a distal portion of a frond of *Hymenophyllum dilatatum* (Forst. f.) Swartz
4a. a frond of *Adiantum aethiopicum* L. (true, or English maidenhair)
4b. a frond of *Hymenophyllum flabellatum* Labill.
5a. a sterile, adult climbing frond of *Blechnum filiforme* (Cunn.) Ettinghsh. (thread fern)
5b. a pinna of *Phymatosorus scandens* (Forst. f.) Pichi Serm. (fragrant fern, mokimoki)
6a. probably a tip of a frond of *Rumohra adiantiformis* (Forst. f.) Ching (shield fern)
6b. a tip of a frond of the perching fern, *Asplenium flaccidum* Forst. f. subsp. *flaccidum* (hanging spleenwort, Makawe O Raukatauri)
7a. part of a frond of *Loxsoma cunninghamii* Cunn. The presence of a stipe, or possibly a portion of a rachis, suggests that this is either a young frond or the uppermost division of a mature frond respectively. The sori in their indusial tubes are positioned in the notches of the ultimate segments of the lamina and are inclined to project beyond the lamina margin. Examining the motif, one is almost inclined to think that Seuffert had consciously indicated them, but the marginal dark spots are more likely to be an artefact produced by the saw when the frond was cut from the veneer and lamp black subsequently applied to demarcate the veins.
7b. a non-climbing frond of *Lygodium articulatum* A. Rich. (mangemange)

Motif 8 is particularly interesting, not for the number of fronds included, but because the species represented form an ecological entity typical of the lowland forest of the Auckland area. It includes:

---

[1] Each motif is identified by a number on the plan (Figure 3) and in the text; where there is more than one fern in a motif, each is identified by a letter.

8a. the distal part of a tertiary pinna of a *Cyathea* species, possibly *Cyathea dealbata* (Forst. f.) Schwartz (silver fern, ponga). This was the most common tree fern in the Auckland area at the time of settlement. The base of the rachis is drawn with a touch of artistic licence, presumably to accommodate the stipes of the adjacent fronds of *Trichomanes reniforme*; but it also balances the design of the motif.
8b. fronds of *Trichomanes reniforme* Forst. f. (kidney fern, raurenga)
8c, 8d. either two pinnae from the apical region of a frond, or apical portions of pinnae from a more proximal region of a frond, of *Asplenium lamprophyllum* Carse. They both lack the prominent basal, acroscopic segment. At first glance they look as though they may be from different species, but *A. lamprophyllum* is a very variable species and both these forms were seen in herbarium specimens.
8e. either a frond of *Anarthropteris lanceolata*, or a juvenile frond of *Phymatosorus scandens*. With shape alone as a guide, the frond of *A. lanceolata* and the juvenile frond of *P. scandens* are indistinguishable. The midrib of the frond is readily seen in both, but the lateral veining is not visible in *A. lanceolata* and, although visible in *P. scandens*, it is reticulate and not free as seen here. I have not seen reticulate venation on any Seuffert pieces, which have ferns on them, although there are cases where one would expect to see it. It is possible that it was not easy to do by the gouging method employed to 'draw' the veins. The general shape of the frond rules it out a *Grammitis* species, where the lateral veins can be seen. Whichever fern this is, it would seem, one way or the other, that Seuffert has exercised some artistic licence once again, and if this is *A. lanceolata* it was probably to balance the design!
8f. a juvenile frond of *Blechnum filiforme* recognised by the distinct marginal teeth of the pinnae, though it appears that the tip of the original frond was lost and Seuffert has used his imagination! The lower part of the frond is absent.

9. a frond of *Asplenium polyodon* Forst. f. (sickle spleenwort, petako), seen here without its long stipe, but the double teeth of the pinnae margins are very clear.

Outer ring of motifs

Encircling the inner ring of motifs is a band of sixteen rectangular ones, each containing a single frond, or portion thereof, set against a background of mottled kauri.

10. a partial frond (Cranwell 1981) *Ctenopteris heterophyllum* (Labill.) Tindale. The skill of the craftsman is exquisitely shown here, with the distinction between sterile and fertile portions of the frond being very clear.

11. a frond of *Blechnum membranaceum* (Hook.) Mett.

12 & 13. probably fronds of *P. rotundifolia* (Forst. f.) Hook. (button fern, tarawera). With so many critical characters (unavoidably) absent it is impossible to say if these are two different species. There are two possibilities, *P. rotundifolia* and *P. falcata* (R. Br.) Fée but, after careful comparison with a number of herbarium specimens of both species and illustrations in several flora, my 'gut feeling' is that both fronds are *P. rotundifolia*, though I am prepared to justify my decision if I were to be asked. According to Brownsey and Dobbie these two species can be difficult to distinguish, so perhaps we should be content to say that this is the case here! *P. rotundifolia* is by far the more common of the two species, *P. falcata* being confined to coastal areas north of Auckland.

14. a very difficult frond to identify! This is the most enigmatic frond on the table and any suggestion as to its identity is open to question. Without going into details as to why, the following three species are all considered possibilities: *Doodia squarrosa* Colenso with the lower part of the frond missing, a frond of *Pellaea falcata*, and the upper part of a sterile frond of a young plant of *Blechnum discolor* (Forst. f.) Keys (crown fern, piupiu). There are 'fors' and 'againsts' for all three species.

15. a frond, probably of *Doodia media* R. Br. (rasp fern, pukupuku).

16. a single pinna from a large frond of *Adiantum diaphanum* Blume (small maidenhair)

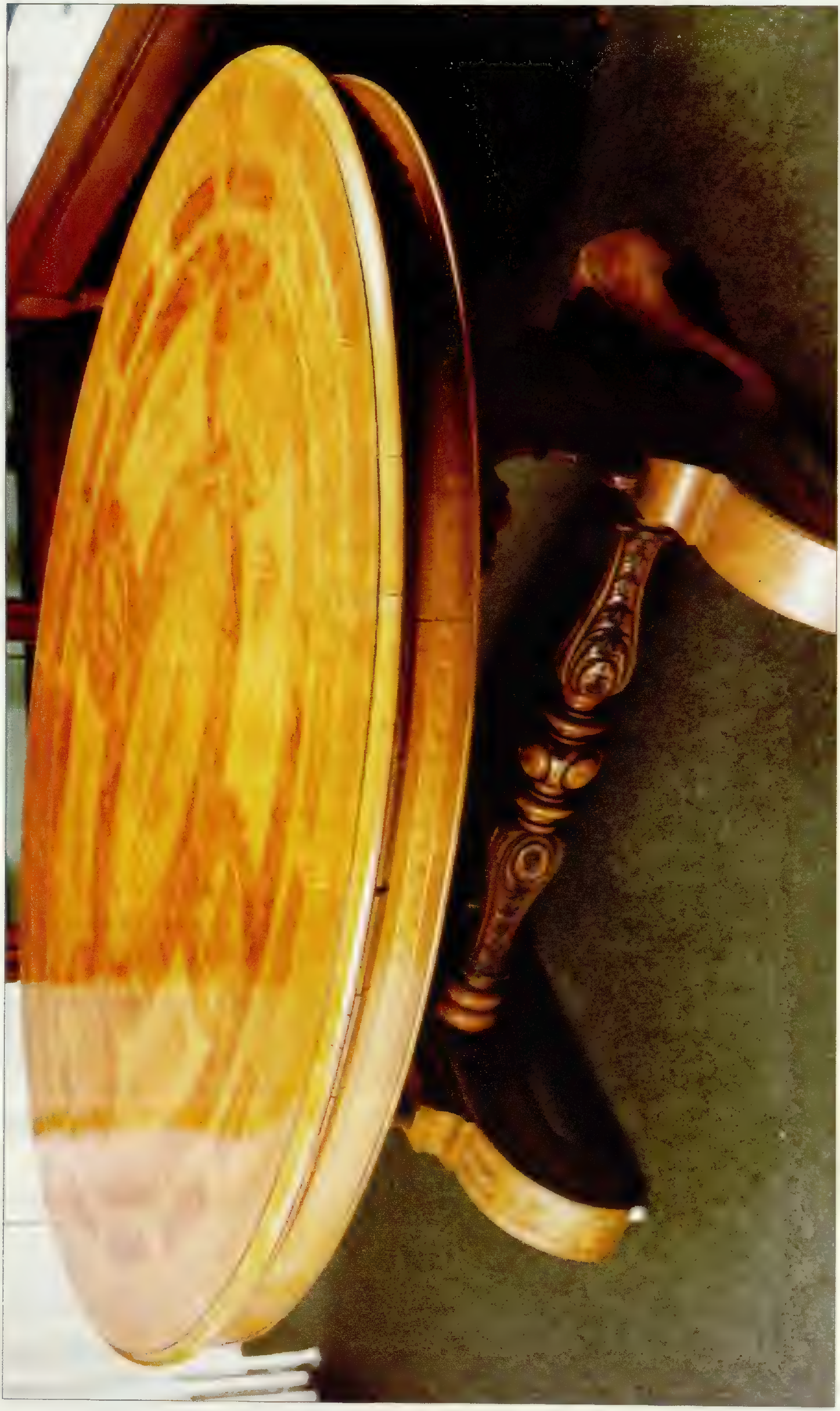

Figure 1. The Larkworthy dining table

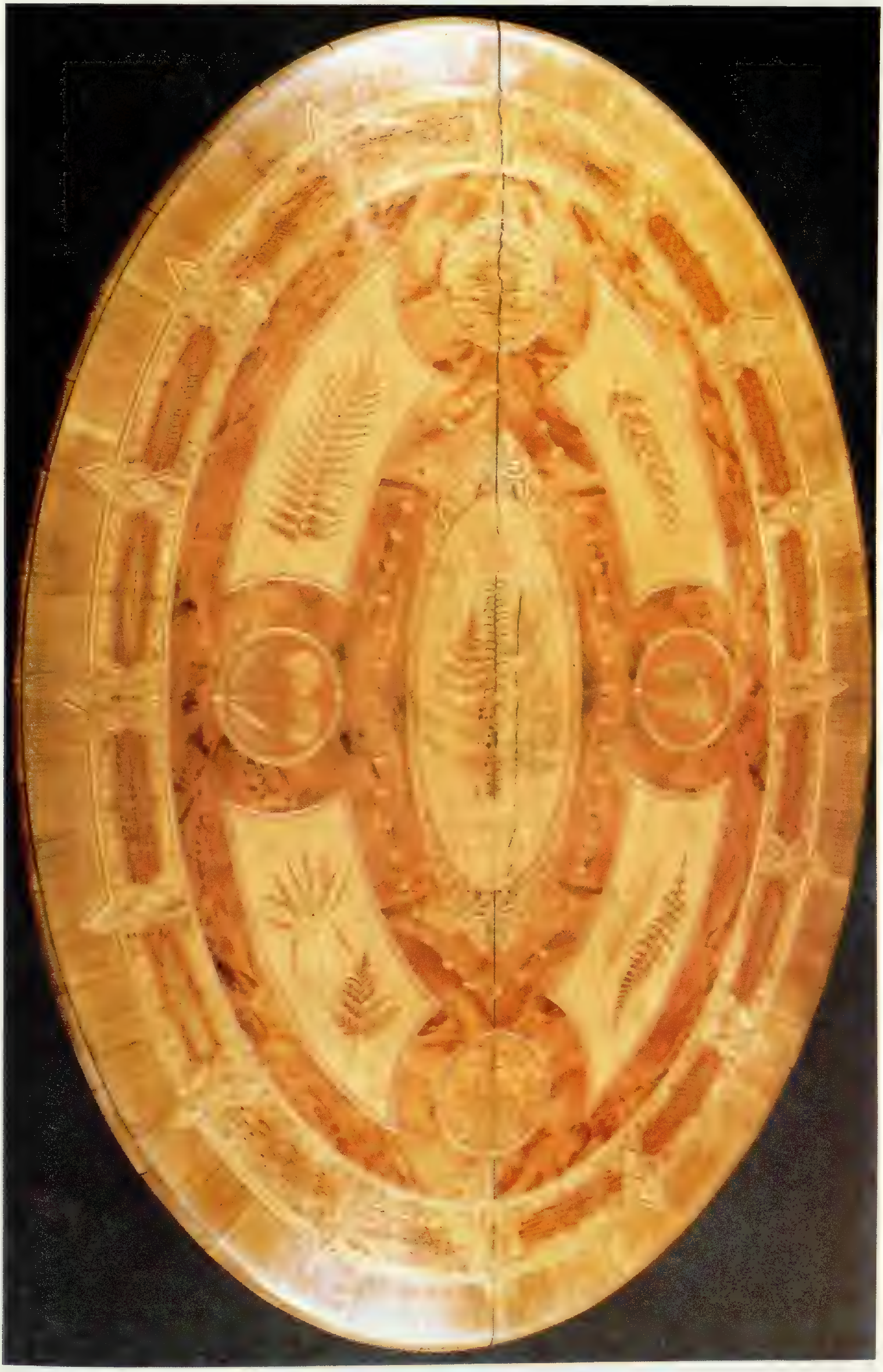

Figure 2. The top of the table

Figure 3. Key to the ferns

1
a
b
c
2
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3
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25
Frond orientations
Apex
Base

17. & 20. probably the ultimate divisions of fronds of *Dicksonia squarrosa* (Forst. f.) Swartz (rough tree fern, wheki). Careful examination would suggest that there is no real difference between these two fragments. One can almost be sure that they are of a *Dicksonia* species, but, because the fragments are so small, so much necessary information is unavailable and it is impossible to say if they are from different species. All three of the New Zealand *Dicksonia* species have been recorded for the Auckland area; *Dicksonia squarrosa* is the most common, the other two being rare.

18. probably a small segment of a frond of *Pteris macilenta*. It is difficult to be entirely certain of the identity of this fern, but it has much similarity to the pinna of *Pteris macilenta* in the central motif (1a) and I suggest that this is the species here. When examining specimens of other possible species I was frequently drawn back to *Loxsoma cunninghamii* by the overall impression, but the motif does not bear close comparison, neither does it, curiously enough, with the herbarium specimens examined of *Pteris macilenta*. However, there is no denying that it is similar to the fern identified as such in the central motif (1a), and which experts, when asked, immediately identify as that species!

19. a small frond of *Asplenium lamprophyllum* Carse. The identity is apparent from the double tooth of the basal acroscopic lobes of the pinnae.

21. a pinna of *Pneumatopteris pennigerum* (Forst. f.) Holttum. Although the drawing of the venation on many of the ferns on the table approximates that of the fern concerned, it frequently exhibits a certain casualness in its execution. There is none of that casualness here, where the unique joining of the basal veins on adjacent segments, typical of this species, is clearly shown.

22. a frond of *Lindsaea trichomanoides* Dryander.

23. a pinna of *Asplenium oblongifolium* Colenso (shining spleenwort, huruhuruwhenua).

24. a frond of *Blechnum chambersii* Tindale (nini) with the lower portion of the frond omitted. The lowermost pinnae of the fronds are more rounded than those along most of the frond's length, and gradually decrease in size; this is not seen in this motif. The fronds of this species can reach up to 50 centimetres plus, so perhaps the one Seuffert had to hand was too long for his motif.

25. probably the pinna of *Pteris tremula* R. Br. (shaking brake, turawera), with the basal segments missing.

Whether or not the templates for the ferns were the fronds themselves, it is obvious that Seuffert had direct reference to samples when preparing the inlays and one is inclined to speculate on how he came by the fronds, which he used. We have no evidence, but perhaps he, or someone in his family, was a keen fern enthusiast, collecting fronds to study, or to press and mount - a popular hobby at the time? Or did he obtain them from one of the several people preparing pressed fern collections for sale, and for one of whom he made inlaid covers for the volumes?

Early records show that all of the species seen on the table were growing in the Auckland area at the time it was made. *Loxsoma cunninghamii* was rare, but most were common and would have been easily collected, especially as the town was still small in the third quarter of the 19th C. and the bush would have been more accessible than it is from the large metropolis that is Auckland today. When it has not been clear which species is illustrated, I have selected the one that was more common in the Auckland area, on the premise that Seuffert was more likely to have used a fern which he, or a collector, could easily have obtained, rather than a rare species or one not likely to have occurred in the area at all.

All visitors to New Zealand are taken by the profusion of ferns, both in quantity and kind. It is not surprising therefore, that Falconer Larkworthy should want such a beautiful and appropriate reminder of his time in that country. Perhaps he came to have an interest in ferns too; certainly it would seem they evoked the country he came to love, for not only did he have a table decorated with them, but it is also possible that he incorporated them in the design of his bank notes.

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